



GROWING UP WITH COMPUTERS™

INSTANT ACTIVITIES FOR YOUR COMMODORE



FREE POSTER IN EACH BOOK

SPACE



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HIGH PRICES



Instant Activities for your Commodore

Helene Chirinian

Shoneen Gervich

Penny Roberts

**ENRICH/OHAUS
San Jose, California**

Introduction

Instant Activities for your Commodore is part of an eight book "Growing Up with Computers"™ series. This beginning programming book for children ages 9 and up introduces computer programming in BASIC. No prior experience with the computer is necessary for either the child or the supervising adult.

A carefully tested step-by-step introduction to the computer by Herbie, a very friendly computer character, unravels the mysteries of programming with humorous stories, delightful drawings, and easy-to-follow programs. Herbie first acquaints the new user with the keyboard and its special keys. The back cover helps the child by being a reminder of proper keyboard fingering position.

Herbie takes the new programmer for a ride in a rocket ship, and in a balloon. Herbie then teaches how to add a blast-off program prior to take-off, and how to add color. Through a sequenced activity-book style of presentation, the new programmers are soon writing their own count-downs and take-offs in balloons and ships of their own design.

Herbie introduces the child to a magician with a bag of tricks, and soon children can write their own magic number guessing games. Silly "mad-libs" will keep your child laughing and eager to do more programming. A colorful center-fold poster emphasizes that computers and computer programming are used in many diverse professions. The longer programs will open vistas of programming possibilities for more experienced users. The beginning user will enjoy copying and running these programs.

Instant Activities for your Commodore is the perfect primer for young programmers. Children should be encouraged to go page-by-page in order to absorb the concepts presented. What the program does, and what is seen on the screen is detailed in each activity. Do not worry about getting stuck as the Quick Reference Guide in the back of the book rescues any seeming emergency. At the conclusion the child will proudly display a well-earned "Perfect Programmer" award. Even if the child's programming is not exactly perfect, we will know he or she had a perfectly wonderful time trying, thanks to Herbie.



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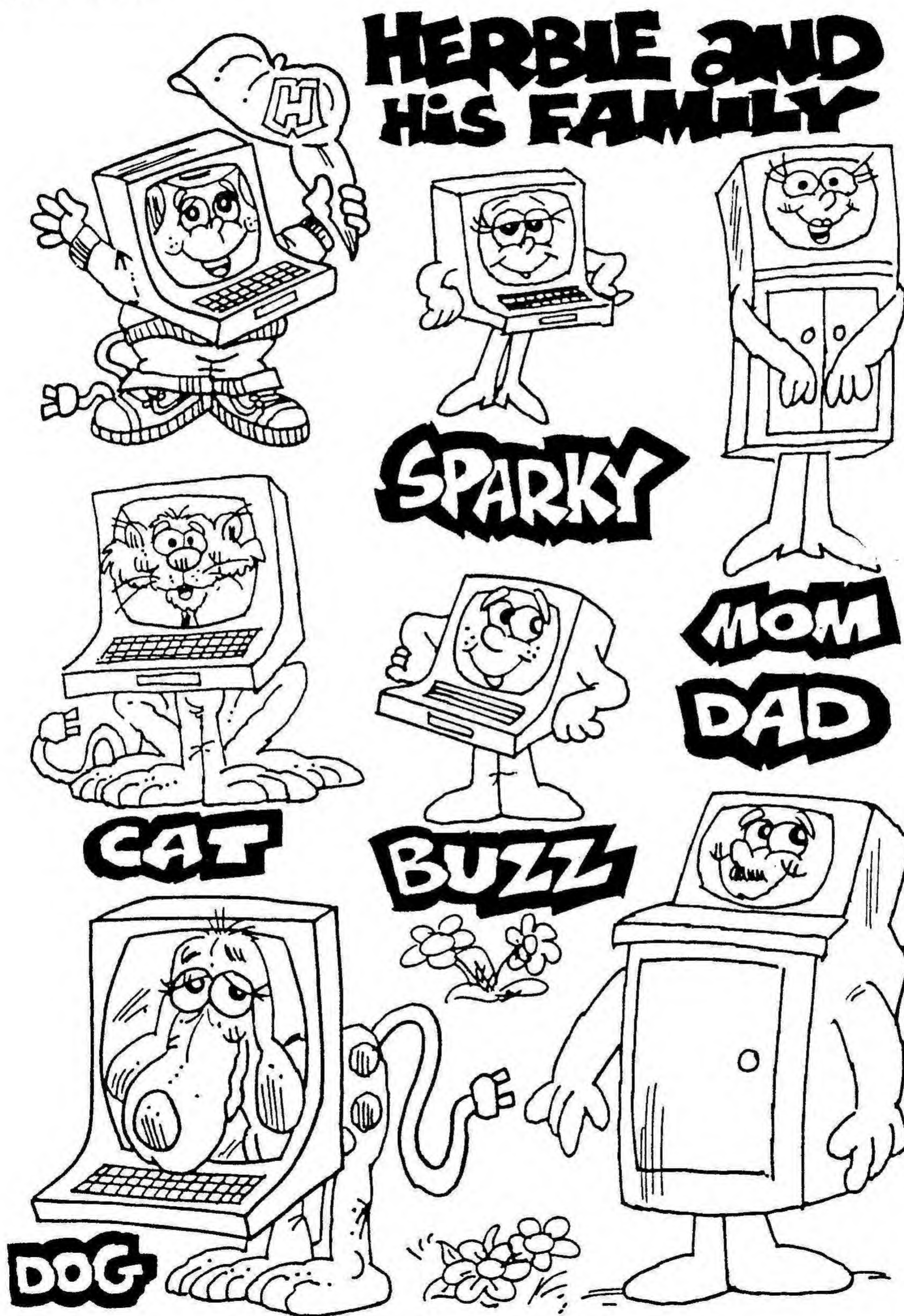
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Table of Contents

| | |
|--|----|
| Meet Herbie | 4 |
| Getting Started-Ready, Set, Go! | 5 |
| Seeing the Sights-Shifty Business | 6 |
| Get the DEL Eraser Out-Insert | 7 |
| Space Bar-Keyboards Fun | 8 |
| RETURN-SYNTAX ERROR | 9 |
| 0's and 1's-A Program | 10 |
| Line Number-LIST | 11 |
| Erasing a Line-Writing a Program | 12 |
| Inserting Lines-NEW | 13 |
| Correcting Mistakes-Line Ordering | 14 |
| Screencleaning-Here Lives Herbie | 15 |
| Happy Birthday to Me-All About Me | 16 |
| Just Dreaming-Changing the Screenery | 17 |
| Reverse Writing-A Computer Bug | 18 |
| Tell Me a Joke-A High HI | 19 |
| Wow! What Words-Initially Yours | 20 |
| A Sticky Friend-A Sea Chanty | 21 |
| Spring Planting-Be a Rainmaker | 22 |
| Growing Season-Drawing Board | 23 |
| Up, Up, and Away-Flying Lessons | 24 |
| Air Space-Basket Weaving Class | 25 |
| Off to Outer Space-Blast Off | 26 |
| The Count Up-Computer Cards | 27 |
| Hide 'n Seek-The Count Down | 28 |
| A-Counting We Will Go-Backwards A-Counting | 29 |
| Ready for Take Off-Take Me Along | 30 |
| A Balloon Blast | 31 |
| A Sad Story-A Happy Story | 32 |
| A Light Friend-An Electrical Friend | 33 |
| Hocus Pocus-Abracadabra | 34 |
| A Magic Game-Be a Magician | 35 |
| A Polite Program-In the Limelight | 36 |
| Copy Cat-Tickets for Two | 37 |
| A "Zooey" Hairdo-Feeding Time at the Zoo | 38 |
| Mary Zoo's Nursery-Silly Sentence | 39 |
| Funny Business-Scoreboard | 40 |
| Fly Me to The Moon-Easy Money | 41 |
| Computer Columns-Computer Glue | 42 |
| Surprise | 43 |
| Quick Reference Guide | |
| BASIC Words | 44 |
| Error Messages | 45 |
| Symbols | 45 |
| Important Keys | 45 |
| Computer Words | 46 |
| Award Certificate | 47 |

Meet Herbie

Hi! I'm Herbie, and this is my family. We are the Micro family! We are a friendly bunch, and, as you can tell, I'm the talkative type. When you finish this book, you will be able to talk back to me, because you will know how to talk in my language, which is BASIC*. So let's get started!



*Capitalized boldface words can be found in the Quick Reference Guide (pages 44-46).

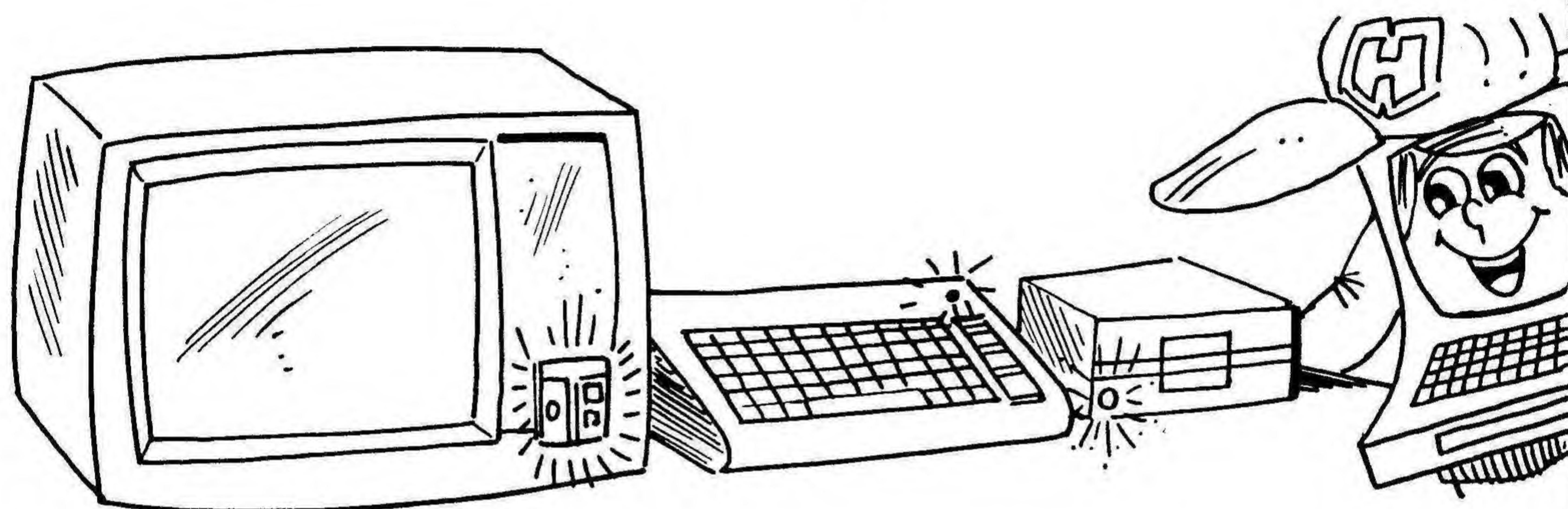
Getting Started

First things first! Check your hands. Make sure they are clean, then let's turn on the computer. Find the unlit power light on the computer.

Turn your monitor or TV on.
Then turn on your computer.

The red power light should be on. Some writing will appear on the screen. This message should also appear on the screen.

READY.

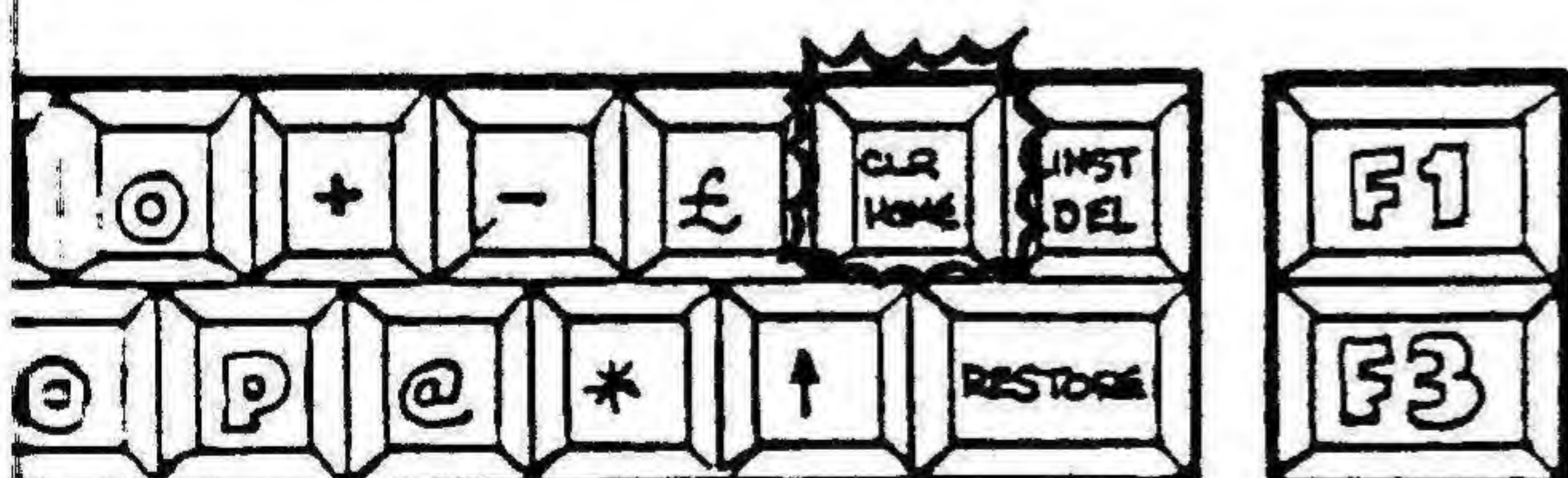


Ready, Set, Go!

READY means the computer is ready to take your every command. The cursor is the blinking square that is underneath the READY. It tells you where you are. The computer is READY and now we begin:

Press the **CLR/HOME** key.


Did you see the cursor move? It moved to its "home" position at the very top left-hand corner. That is why the key says HOME on it!




Seeing the Sights

The cursor is a special key. Let's get to know it better! It can go anywhere, if you know how.

Press the CRSR  key and watch it go to the right.

Press the SHIFT and the CRSR  key and watch it go to the left.

Press the CRSR  key and watch it go down.

Press the SHIFT and the CRSR  key and watch it go up.

This is easy! Can you move it around the outer edge of the screen, as if you were making a picture frame?



Shifty Business

Find the SHIFT LOCK key. Press it down and type some letters. Did you get some very funny looking symbols? They are graphics characters.

Press it again—capital letters! Press it again—graphics characters.

With graphics characters, you can write in code. Write your name and see what it looks like in graphics characters.

Is your screen a mess? Do you want to do some housekeeping? Do this to see the fastest housecleaner alive.

Press SHIFT and while holding it down, press CLR/HOME.

Pressing SHIFT with CLR/HOME gets you the clearing up (CLR) part of the key. Because the CLR is on the top part of the key, you have to press SHIFT to get it into action.



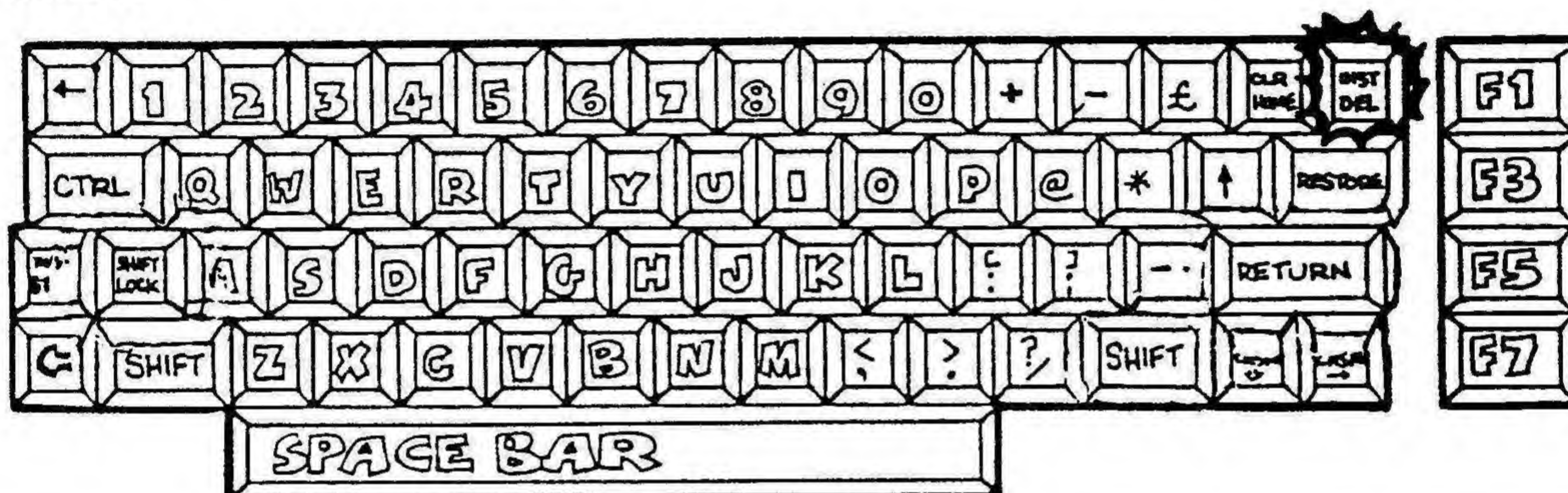
Get the DEL Eraser Out

Wow! That was a lot of cleaning in a hurry. Maybe you just need to clean up a little mess. Let's practice how to use the arrow keys to clean up small messes. Type this:

HERBEE

Oops! I spelled my name wrong! Let's go back and correct that. Press the INST/DEL key twice to the first E. Now type an I right over it, and then an E next to it. Now my name is spelled right because we deleted, which means erased, the spelling mistake. DEL on the key stands for delete. You should have this on your screen now.

HERBIE



Insert

What does INST stand for? INST stands for insert, which means to put in something. Let's insert a short word, like HI. This is how we do it.

1. Use the SHIFT and the CRSR \leftrightarrow key to go over to the H.
2. Press SHIFT and INST/DEL.
3. Press the above keys 3 times, twice for HI and once for the space.
4. Type HI, and a space.
5. Use the CRSR \leftrightarrow to go to the right and out of the way.
6. The screen looks like this now:

HI HERBIE

You just inserted a word! Can you go back and insert 2 words so that the screen looks like this:

I SAY HI HERBIE



Space Bar

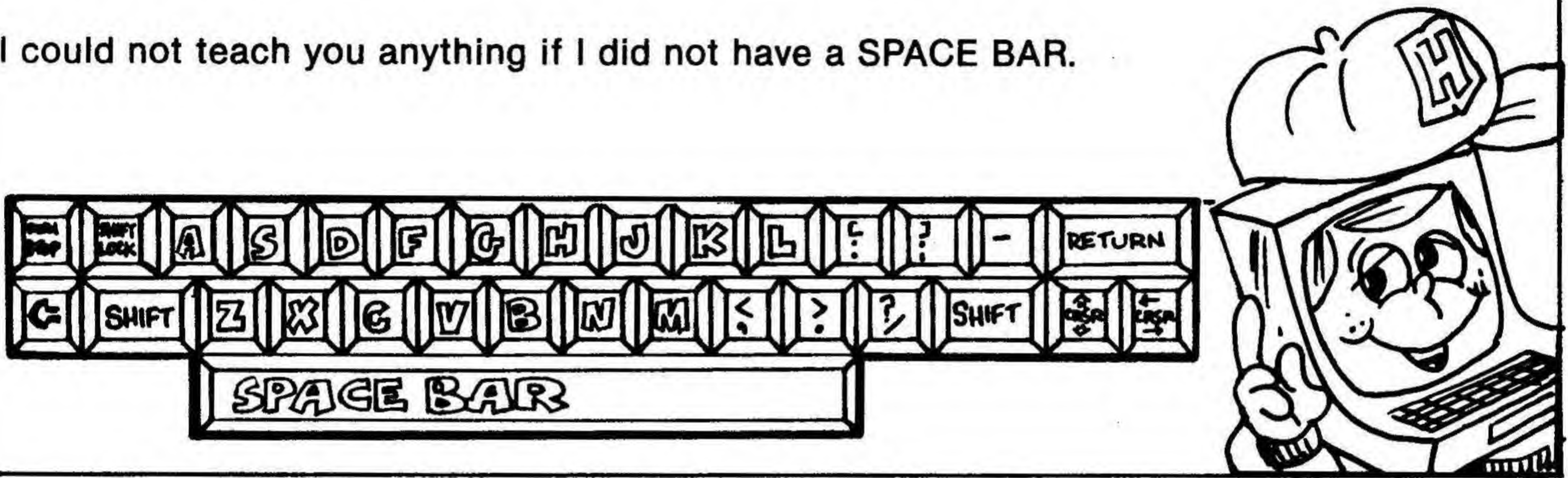
Have you ever heard of a SPACE BAR? No, it isn't anything like an ice cream bar or a candy bar. It's the long bar below the keys on the computer keyboard. It makes blank spaces. It is called the SPACE BAR. You use it so your words won't stick together and look like this:

HERBIEMICROLIKESTOTEACHABOUTCOMPUTERS.

Now we can read the words after using the SPACE BAR:

HERBIE MICRO LIKES TO TEACH ABOUT COMPUTERS.

I could not teach you anything if I did not have a SPACE BAR.

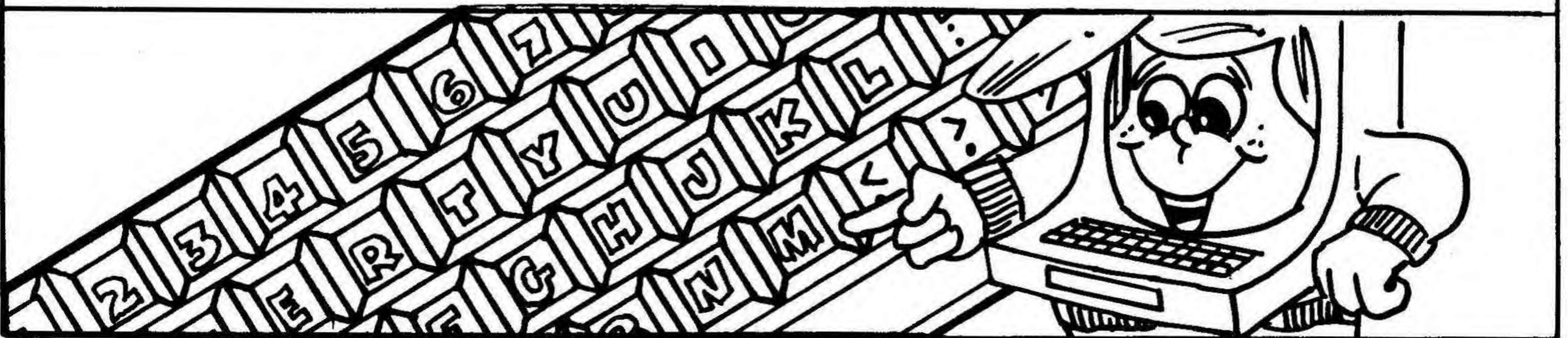


Keyboard Fun

This is going to be fun! Try out my keys, lots and lots of them, but only press one at a time. Spell your name; spell my name; spell anything; spell nothing.

Careful on the keyboard! I don't like to be pounded. You would not like to be pounded either.

This is what I think about my new computer chips. Can you type this?

[illegible]

RETURN

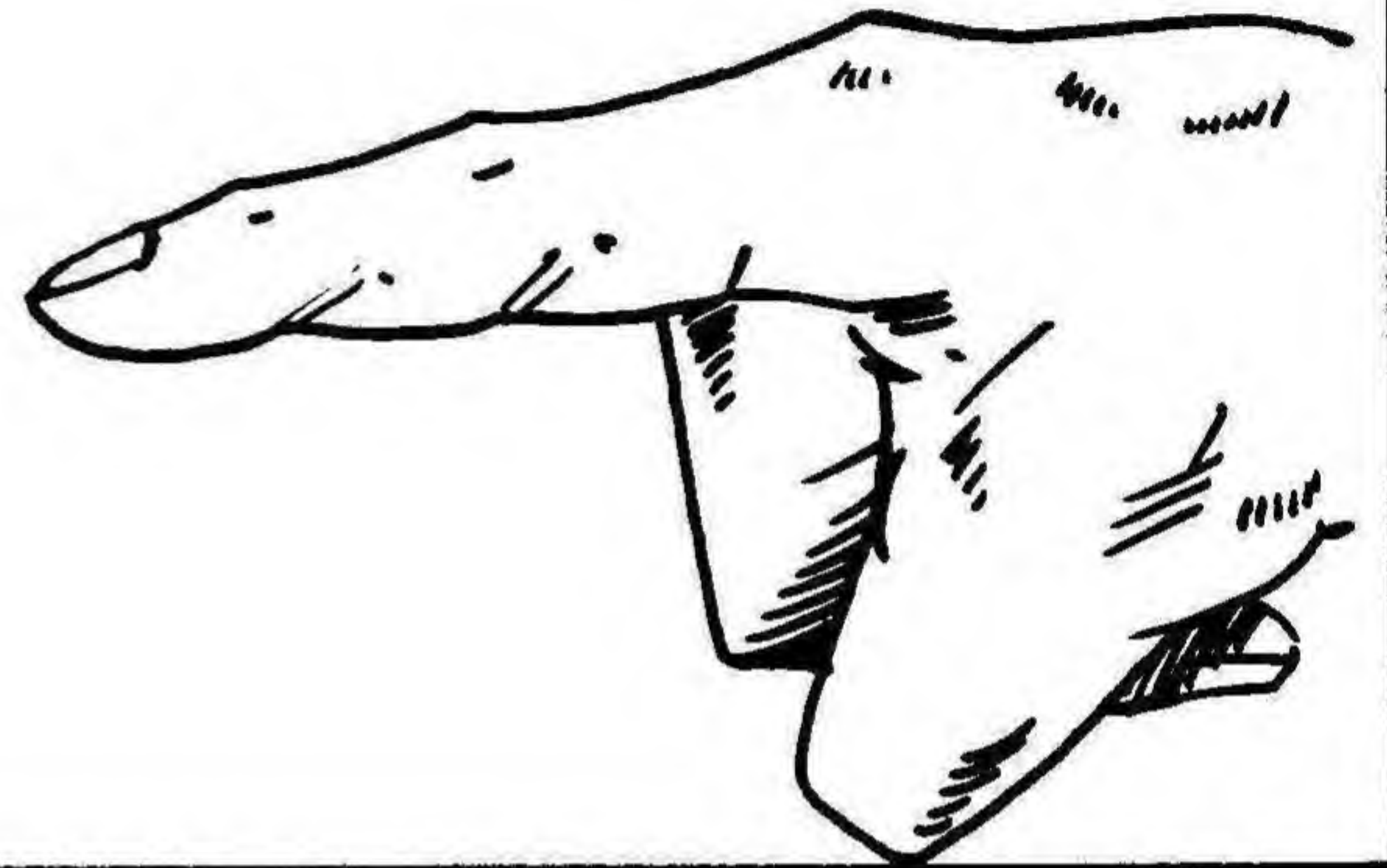
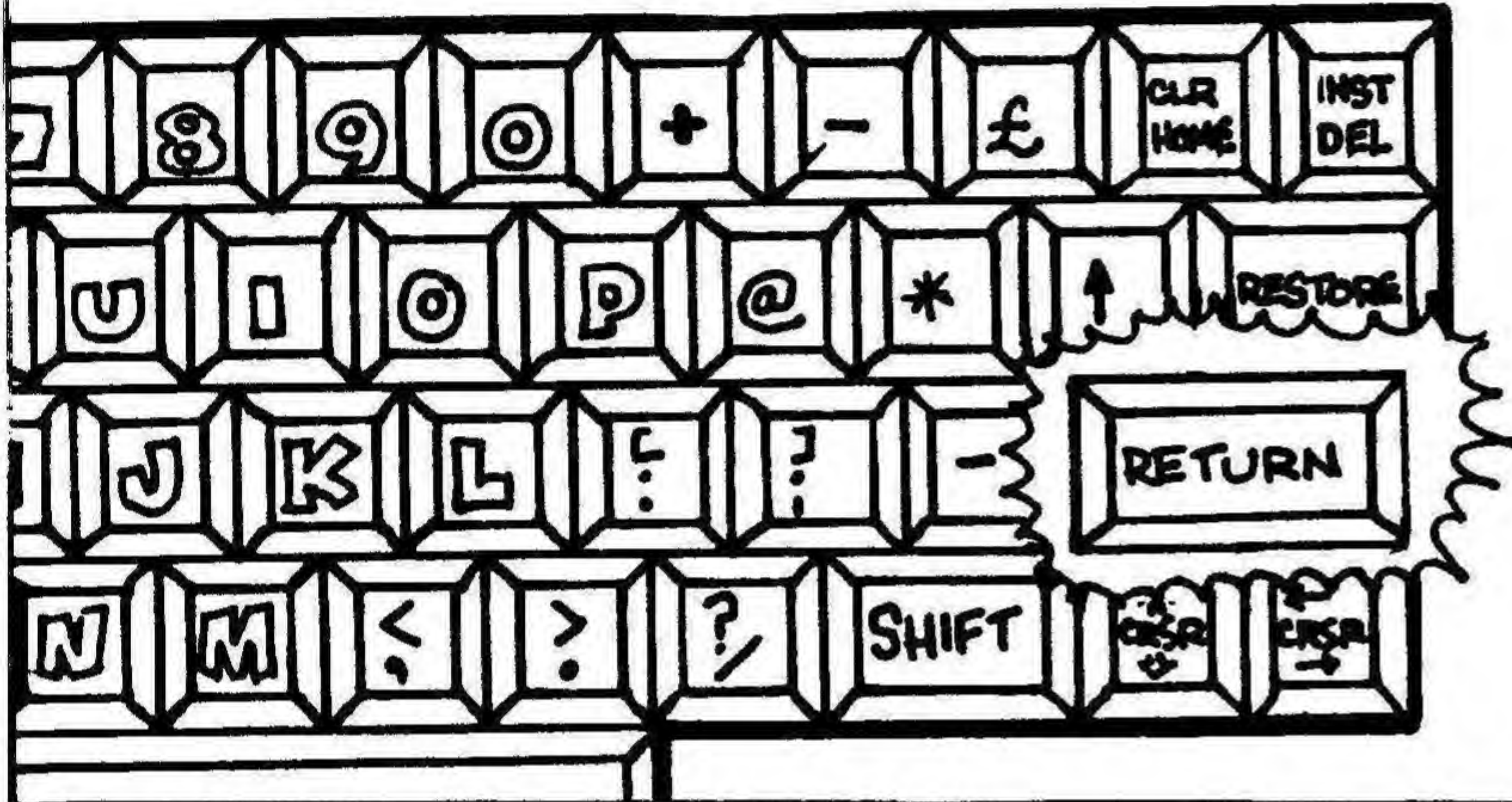
Everytime I go somewhere I have to RETURN. Do you always return home when you go somewhere? You tell a computer to RETURN by pressing the RETURN key. You always have to come back to the RETURN key.

RETURN puts you at the left margin. Write my name and press the RETURN key and see what happens.

HERBIE press RETURN

Oops! Did you get a special message like the one below? Yes! Congratulations, you did it correctly.

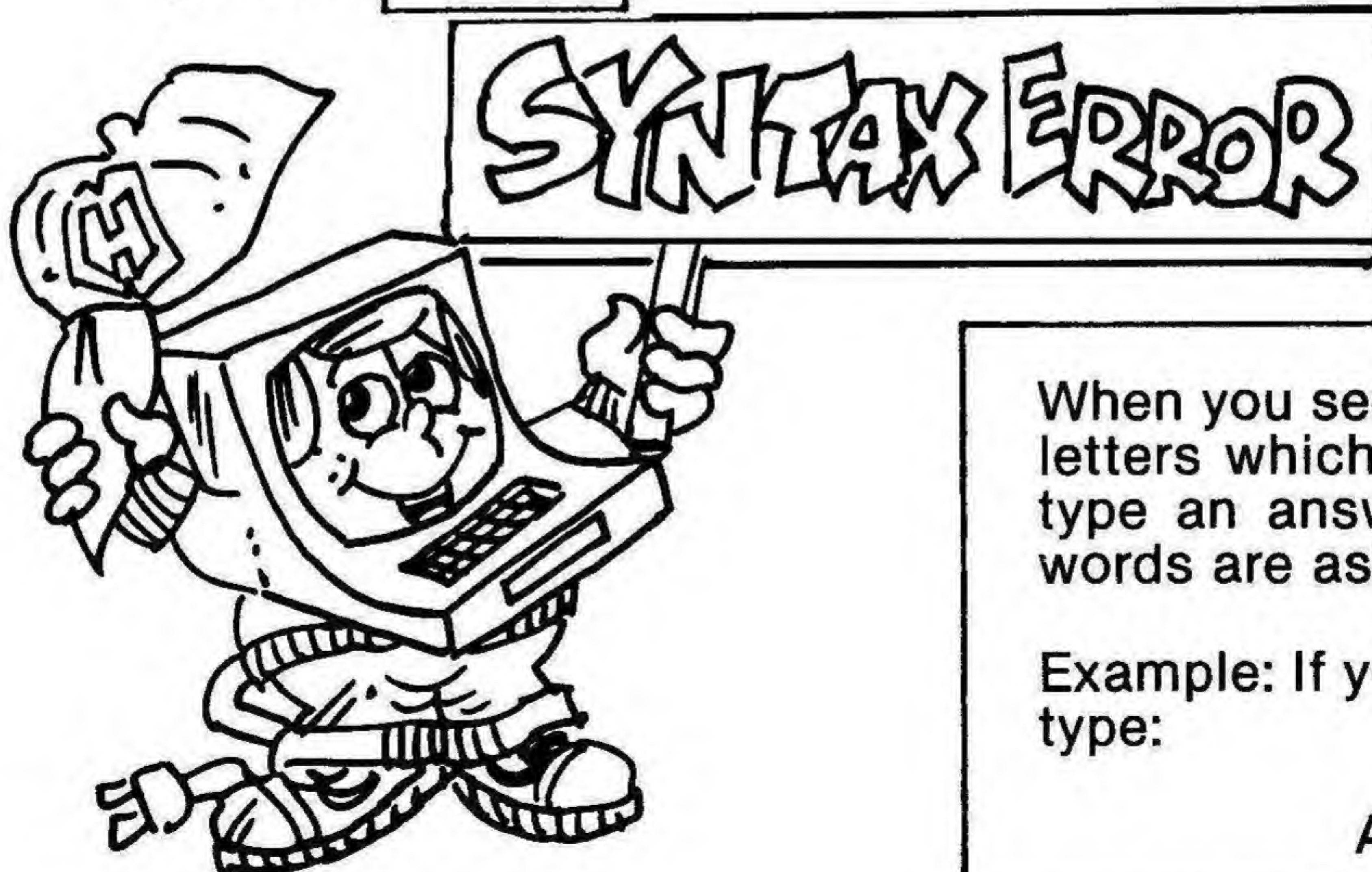
?SYNTAX ERROR
READY.



SYNTAX ERROR

Don't worry! Nothing is wrong. Nothing is broken. SYNTAX ERROR just means the computer does not know what you are talking about. We know the computer doesn't know HERBIE, but let's try your name. Maybe it knows that.

your name press RETURN



When you see words in small letters which are underlined, type an answer to what the words are asking.

Example: If your name is Ann type:

ANN

Oops! SYNTAX ERROR again! (pronounced sin-tax) The computer does not know your name either, because it needs some instructions in front of it to know what to do with your name. It needs a computer program!

0's and 1's

To make a computer program you need to know how to count, which I know you already know. When you talk to computers you have to tell us the numbers *very carefully*. Sometimes new programmers (that's you!) get mixed-up so I need to help you.

Look at the keyboard and type a row of the capital letter O, and number 0. See the difference? The number 0 looks like it has a crack.

oooooooooooooooooooooooooooooooooooo

000000000000000000000000000000

Now type the number 1, a whole row of them, and then a row of the capital letter I. It is easy to see the difference now.

111111111111111111111111111111

IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII



Just remember to type the number or letter, whichever one you *really* mean, otherwise I get very confused. Now type this so that we won't confuse the computer with all those strange numbers.

NEW

press RETURN

A Program!

Let's learn some more computer talk. Let's write a computer program!

10 PRINT "HERBIE"

press RETURN

RUN

press RETURN

Do you see this on the screen?

HERBIE

Now you type this:

20 PRINT " your name " press RETURN

RUN

press RETURN

Press the SHIFT key to get the QUOTATION marks (" ").

Did you get a 0? If you forgot the QUOTATION marks the computer writes 0.

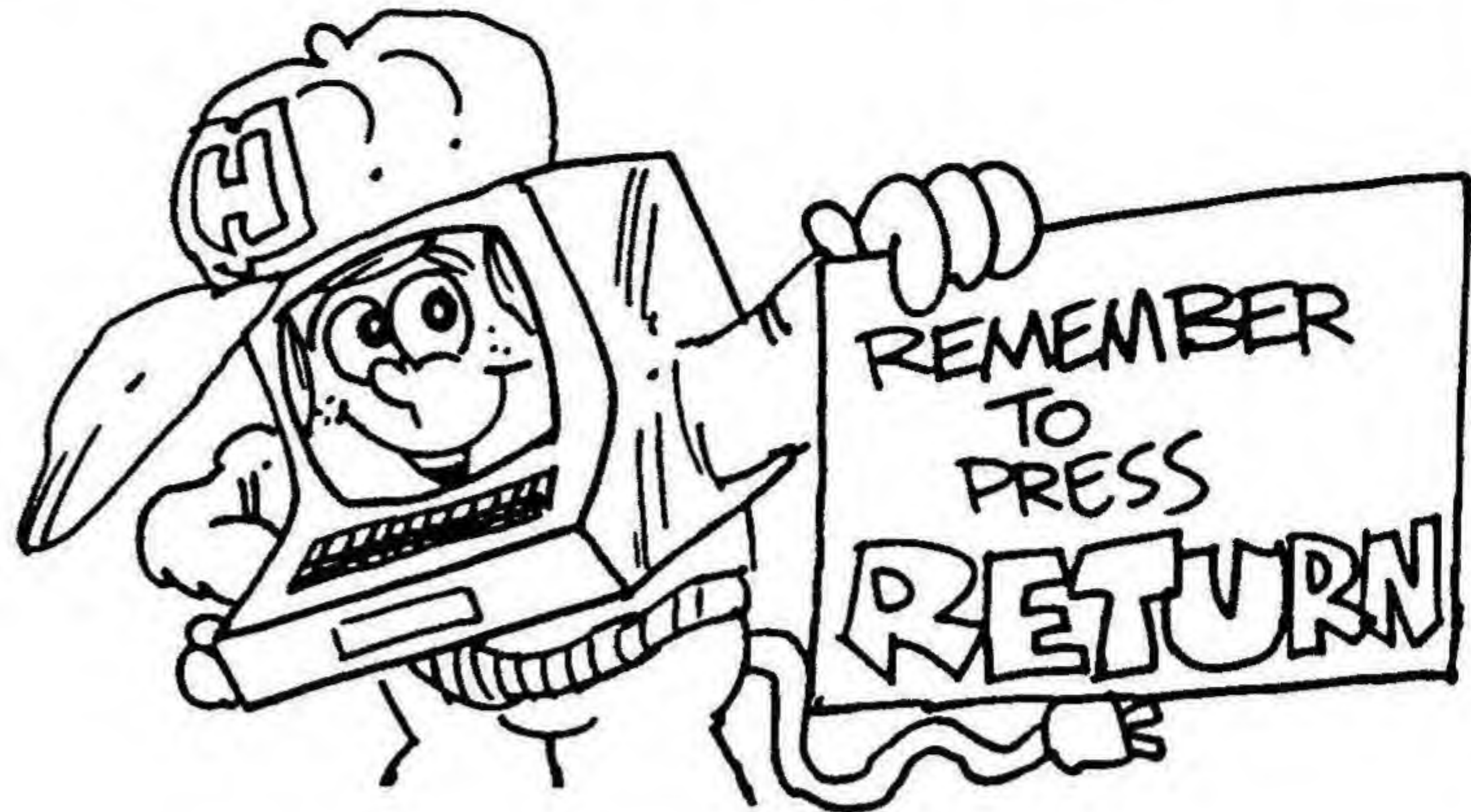
Do you see your name and HERBIE on the screen? I hope you do. If not, type it again being very careful to start at the far left edge. Are you using 0's and 1's correctly? Don't forget to press RETURN after each line. If it does not work write NEW, press RETURN, and try again.

Line Number

What is a computer program? It is not like your favorite TV program. It is not like a TV show at all. Here is what it is:

A computer program is a group of instructions for the computer to follow.

Each instruction has a LINE NUMBER.



Let's make a longer program. Keep adding more LINE NUMBERS with PRINT and QUOTATION marks. Remember to press RETURN at the end of each line.

30 PRINT "HELLO"

press

40 PRINT "HOW ARE YOU?"

press

RUN

press

LIST

Oh! That was fun! Write some more, but whatever you want to write. Press RETURN at the end of each line.

50 PRINT "_____ " press

60 PRINT "_____ " press

70 PRINT "_____ " press

RUN press

Have some of the instructions that you have been writing disappeared right off the screen? Yes? Do you think the computer might have forgotten it? Well, don't fear, we computers have good memories. Do you believe me? Just type LIST.

LIST press

See, nothing was forgotten. LIST made the computer show you everything in its changeable RAM MEMORY. We computers are pretty sharp!

Erasing a Line!

Oops! Sometimes I make a mistake. Like the time I gave out all the answers instead of the questions for Mrs. Brown's math test. Do you sometimes make a mistake? Do you want to fix it? If you make a mistake typing, or you just want to erase a line, this is how you do it.

Let's say you LIST your program and you want to erase line 30. This is how you do it.

LIST press

30 press

That is all there is to it! Line 30 now has nothing in it. It is erased. Do you want to see for yourself? Just write LIST and see. Now, try some more erasing. To erase my name, line 10, just do this:

10 press



Try erasing your entire program now. It is easy. Check yourself by writing LIST. When it is all gone there will be nothing to LIST!

Writing a Program

Is that program all gone? Type LIST to check. Good! Let's start a new one. Let's think of all the fun things there are to do in the summer time. I'll give you a start and you can finish.

10 PRINT "IN THE SUMMER TIME I
LIKE TO DO THESE THINGS:" press

20 PRINT "COMPUTER PROGRAMMING" press

30 PRINT " _____ " press

40 PRINT " _____ " press

50 PRINT " _____ " press



Remember: Press RETURN only after the last QUOTATION mark in each line. In LINE NUMBER 10 let the computer drop you down to the next line. Press RETURN when you are finished with THINGS:". Press RETURN on each line after the last QUOTATION MARK.

Inserting Lines

Sometimes it's fun to slip into secret places, like under the bed, or behind the couch. Sometimes it is fun to slip in more lines in your computer program too. Follow me and I will show you how.

LIST

press

RETURN

5 PRINT "SUMMER VACATION JUST-IN-CASE-I-GET-BORED LIST"

press

RETURN

RUN

press

RETURN

Remember to press RETURN on each line *only* after the last QUOTATION mark. For a long line the computer will drop down to the next line by itself.

Did SUMMER VACATION JUST-IN-CASE-I-GET-BORED LIST slip into your program? I hope so? Pretty easy, isn't it? Just remember to press RETURN at the end of each line. From this lesson on, you are on your own. There will be no more reminders to press the RETURN key.

NEW

What do you think of computers now? You know a lot, but let's learn something NEW! Type these four commands below. Press Return after each word.

LIST

NEW

LIST

RUN



Nothing happened, did it? That is because you erased all the computer's changeable RAM MEMORY with one new word. That very powerful word is NEW. Now you will have to write a NEW program, because the old one is gone. NEW gets you ready to write a NEW program by erasing the old one from the memory.

NEW erases the computer's memory
SHIFT CLR/HOME erases the computer's screen

Correcting Mistakes

Nobody's perfect! Yesterday my brother Buzz spilled chocolate milk all over the dog. We had to wash the dog. Boy, did he yowl! Computer mistakes are easier to fix. Type this silly program in, and then we will fix it.

```
NEW
10 PRINT "WE WASHED OUR DOG"
20 PRINT "IN THE TUBA."
RUN
```

Oops! Did you find the spelling mistake?
Let's change line 20 and tell the truth.

```
20 PRINT "IN THE TUB."
RUN
```



Just type the line over that you want to change. You do not have to write the whole program. Whew! That sure saves a lot of typing.

Line Ordering

Want to know another neat trick we computers can do? It doesn't matter in what order you write the program line numbers. We will straighten them out for you. Too bad, computers can only straighten out program line numbers; we can't straighten out your closet yet. You'll have to do that. Just try us out on the jumbled-up program below.

```
NEW
20 PRINT "I ASKED IF IT WAS
FEELING FINE."
30 PRINT "IT SAID NO."
10 PRINT "A COMPUTER IS A FRIEND
OF MINE."
50 PRINT "AND HAVE ITS DISKS
REALIGNED!"
40 PRINT "IT HAD TO GO"
RUN
LIST
```



You should have a poem that rhymes.

Screencleaning

Let's do some spring screencleaning. You know if you put PRINT 'SHIFT CLR/HOME' at the beginning of each program, the screen gets cleaned every time you RUN the program. Make sure you press the SHIFT key first, then the CLR/HOME key. When you type it on the screen it comes out with a graphics character. Type the program below to see what the graphics character is.

```
NEW
10 PRINT " SHIFT CLR/HOME "
20 PRINT "MY NAME IS _____."
30 PRINT "I AM _____ YEARS OLD."
RUN

LIST

RUN
```



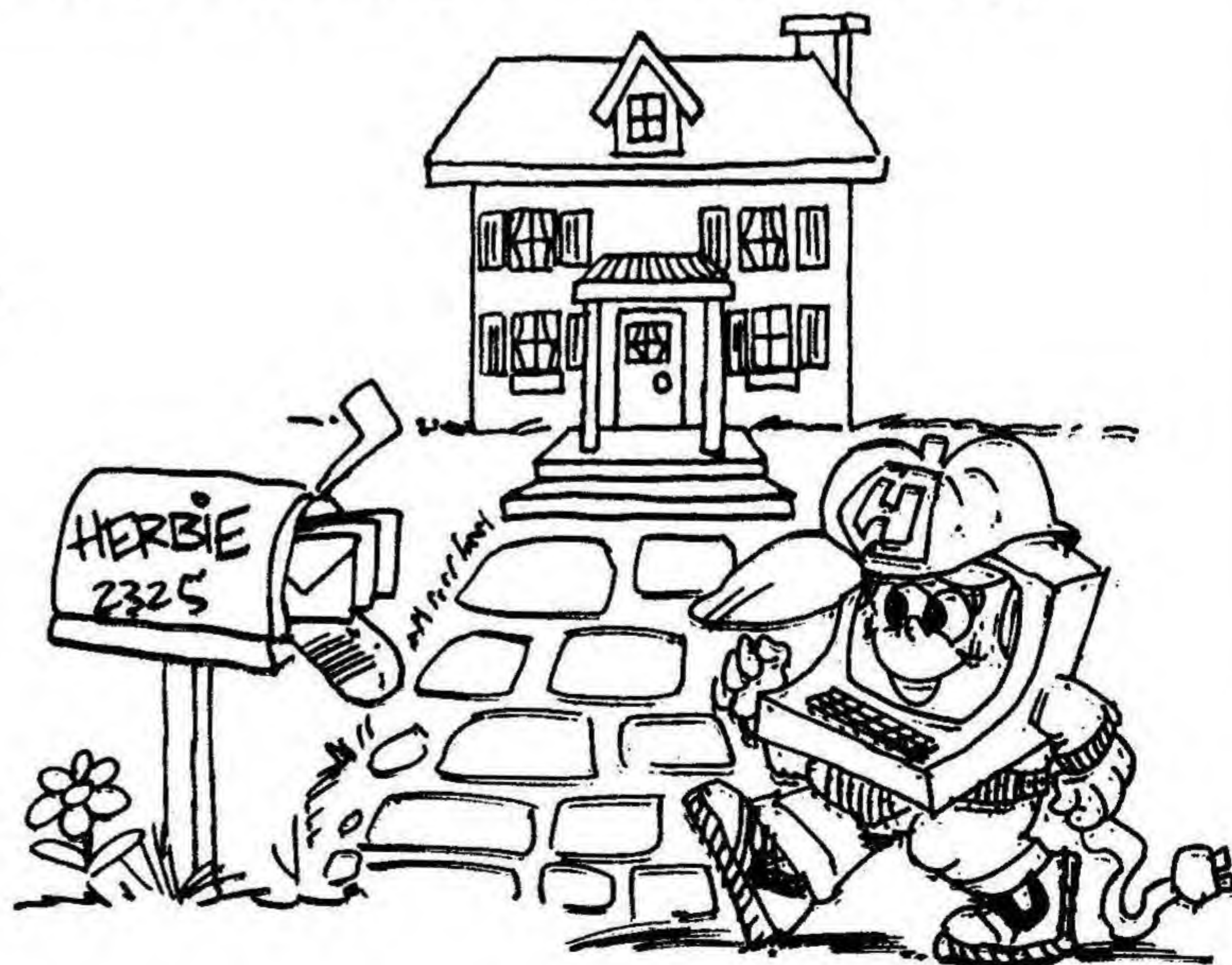
Did you see the reverse heart? If not, try it again until you find the heart in your program LIST. Notice that clean fresh screen you get every time you RUN the program? That's what the heart does for you.

Here Lives Herbie

Do you want to know my address? Just look below in the program to find it. Can you write your address? Just follow the program below, but put in your name and address.

```
NEW
10 PRINT " ♥ "
20 PRINT "HERBIE MICRO"
30 PRINT "ENRICH/OHAUS"
40 PRINT "2325 PARAGON DRIVE"
50 PRINT "SAN JOSE, CA 95131"
RUN
```

```
NEW
10 PRINT "_____"
20 PRINT "_____"
30 PRINT "_____"
40 PRINT "_____"
RUN
```



Did you remember how to get the heart? Just press SHIFT and the CLR/HOME keys. From now on, every time you see the ♥ you will know which keys to press to get it.

Happy Birthday to Me!

Happy Birthday to Me, Happy Birthday to Me, Happy Birthday Dear Herbie, Happy Birthday to Me! My birthday is on April first. I would like a Space Worms computer game. When is your birthday? Put it into your computer's memory.

```
10 PRINT " 🎂 "  
20 PRINT "your name"  
30 PRINT "MY BIRTHDAY IS ON date."  
40 PRINT "I AM age YEARS OLD."  
RUN
```

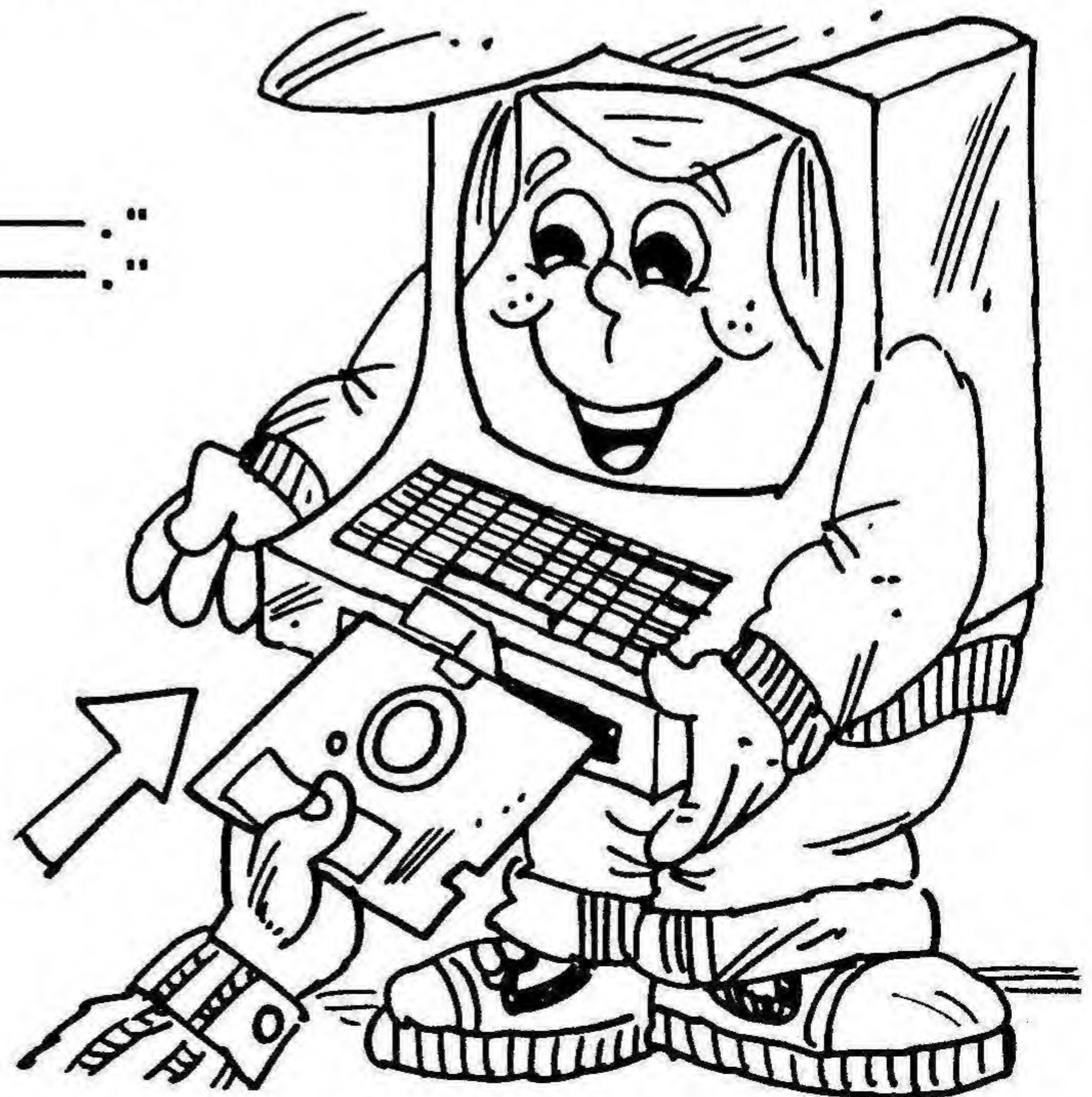


Don't forget to write NEW!

All About Me

I am nine years old. I like to play Space Worms. I like to eat disks! Friends should know a lot about each other. Now you know about me. Tell me about you! Type in the program below. Don't forget NEW before you begin and RUN afterwards. There will be no more reminders. If your program doesn't work, you've forgotten to type NEW or RUN.

```
10 PRINT " 🎂 "  
20 PRINT "ALL ABOUT ME"  
30 PRINT "I AM age YEARS OLD."  
40 PRINT "I LIKE TO PLAY _____."  
50 PRINT "I LIKE TO EAT _____."  
60 PRINT "THAT IS ALL FOR NOW."
```



Just Dreaming

I like colors, lots and lots of colors. I like to dream in color. I dreamed my cursor, and even my whole screen, changed colors. Then I woke up and found out it was true!

Bring on sweet dreams by turning off the lights. Type this to blacken your screen:

C-64

POKE 53281,0

Vic-20

POKE 36879,8

Using the CTRL keys and the number keys, change the color of the cursor. Look at the side of the keys 1-8. Press the CTRL key first, then type a number. Watch the cursor change color. Did it disappear sometimes.? It only looked as if it disappeared because it faded into the color of the background. Type the line below. Press the CTRL key when you see [CTRL] and a number in brackets.

[CTRL][3] DREAMS [CTRL][4] SHOULD [CTRL][5] BE [CTRL][6] IN
[CTRL][8] COLOR!

Look, different color print! My dreams
come true...in technicolor!



Changing the Screenery

I dreamed I changed the whole world, well, at least my screen. This is how to make this part of the dream come true.

COMMODORE 64 type this:

POKE 53280,56

POKE 53280,134

POKE 53280,—— (You pick a number now between 0-255)

Did you see the screen border change from red to blue and then to ? (whatever color-number you put in). I think this is fun! Let's change the screen color now. Pick a number between 0-255 to go into the blank, then keep experimenting.

POKE 53281,——

Keeping the cursor white ([CTRL][2]) helps you to see the screen better. It is a good idea to set your typing and cursor to white whenever you use the computer.

VIC-20 type this:

POKE 36879,—— (any number from 0-255)

To return the screen to normal colors type this:

C-64

POKE 53280,14

POKE 53281,6

Vic-20

POKE 36879,27

Reverse Writing

"I wish I could go to Hawaii," said Herbie. "What for?" asked his sister Sparky. "We have a lot of relatives there. I'd like to see them. Our relatives in Hawaii have a lot of fun, too." Sparky looked puzzled. "How do you know that? What do they do for fun?" Herbie shook his head. "I won't tell you." You can find out Herbie's secret, though. Just type the program below.

```
10 PRINT "  "
20 PRINT "WHAT DO HAWAIIAN
   COMPUTERS DO FOR FUN?"
30 PRINT
40 PRINT "[CTRL][9] GO KEYBOARDING!"
```



CTRL 9 is the key to turn on the reverse writing. Look and find the words RVS ON written on the front of the 9 key. Press the CTRL key and the 9 key at the same time. You will see the letter R in reverse writing.

A Computer Bug

Don't be bugged if there is a computer bug in your program. What is a computer bug? It is a mistake, but it can drive you buggy. Type the program below to find out about a program with a bug in it.

```
10 PRINT "  "
20 PRINT "WHAT WAS THE BUG DOING
   IN THE COMPUTER PROGRAM?"
30 PRINT
40 PRINT "[CTRL][9] LOOKING FOR
   A BYTE TO EAT!"
```



Did the answer look like it had a white box around it? If it did, you hit the right keys.

Tell Me a Joke

I bet you have more riddles you'd like to program. If you can't think of any, here are some answers that might help you remember.

1. To hold up his pants
2. To get to the other side

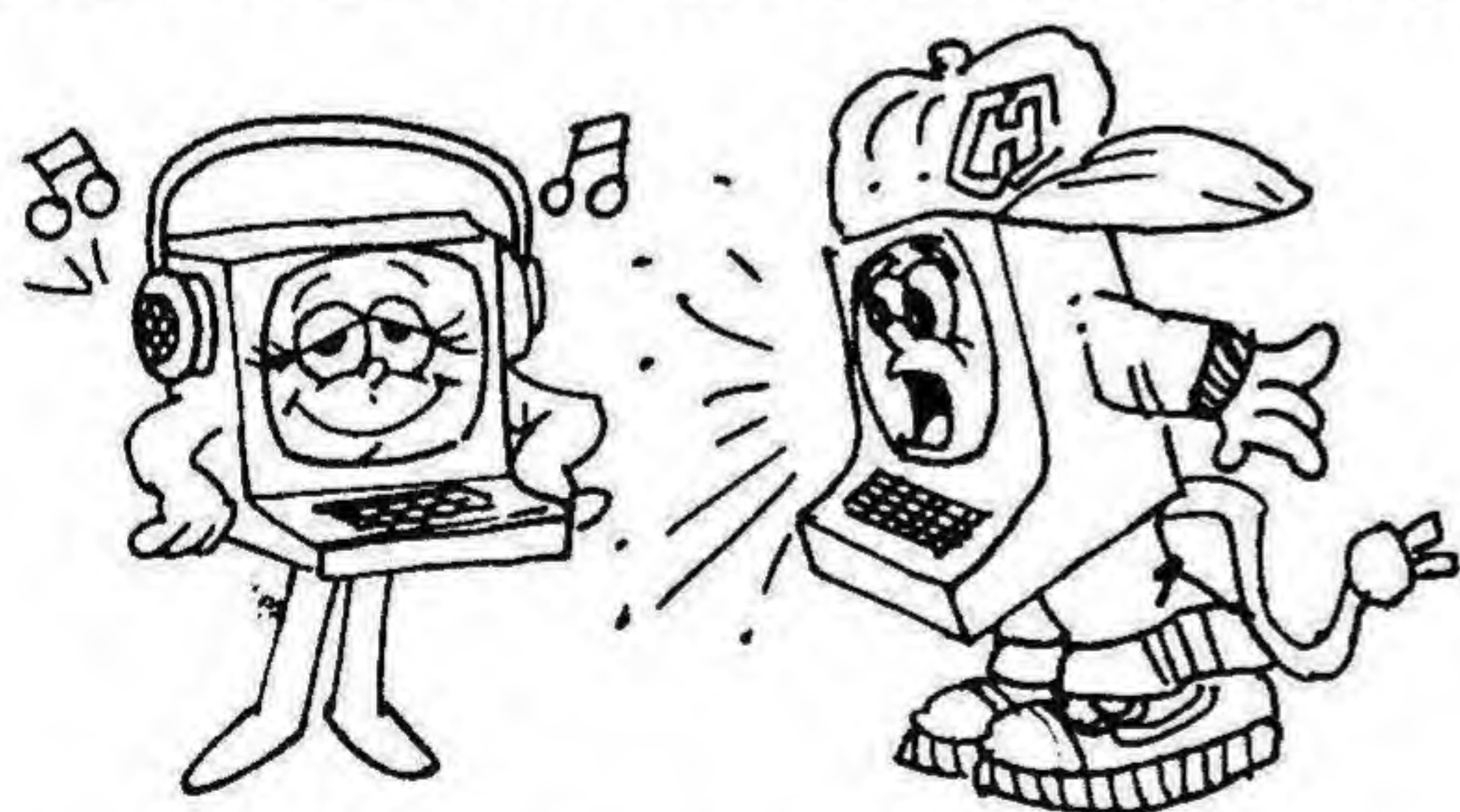
You don't like those? Here's your chance to come up with better ones!

```
10 PRINT "  "
20 PRINT " _____"
30 PRINT " _____"
40 PRINT "[CTRL] [9] _____"
```



A High HI

"Hello," said Herbie to Sparky. Sparky did not say a word. Herbie spoke louder. "HELLO!" he yelled. Sparky did not even look at her brother. Herbie got angry. He got louder and louder. "HI!" he yelled. Then he looked at Sparky again. She was humming a tune and had tiny earphones plugged in. Do the program below to see how Herbie finally got his sister's attention. The lines will help you count over to the right spot!



PRINT may be abbreviated with a ?. For example, this program could be typed like this:

```
10 ?"  "
20 ?"H      H      I"
30 ?"H      H      I"
```

```
10 PRINT "  "
20 PRINT "H      H      I"
30 PRINT "H      H      I"
40 PRINT "H      H      I"
50 PRINT "HHHHHH      I"
60 PRINT "H      H      I"
70 PRINT "H      H      I"
80 PRINT "H      H      I"
```

If you make a mistake on a line, just type that line over again. The correct version will appear in your program.

Because of the small screen on the VIC, VIC users should always use ? when doing picture programs.

Wow! What Words!

It's fun to make giant-sized words. Herbie ran up to his brother Buzz. "I have our whole weekend planned," Herbie announced. "First, we'll play baseball. Then we'll play computer games. Then we'll see a movie. "The Computer's Revenge" is playing." Type the program below to see Buzz's answer to Herbie.

```

10 PRINT " "
20 PRINT "  OOOOO  K   K  "
30 PRINT " O   O K   K  "
40 PRINT " O   O K   K  "
50 PRINT " O   O K   K  "
60 PRINT " O   O K   K  "
70 PRINT " O   O K   K  "
80 PRINT " O   O K   K  "
90 PRINT "  OOOOO  K   K  "
```

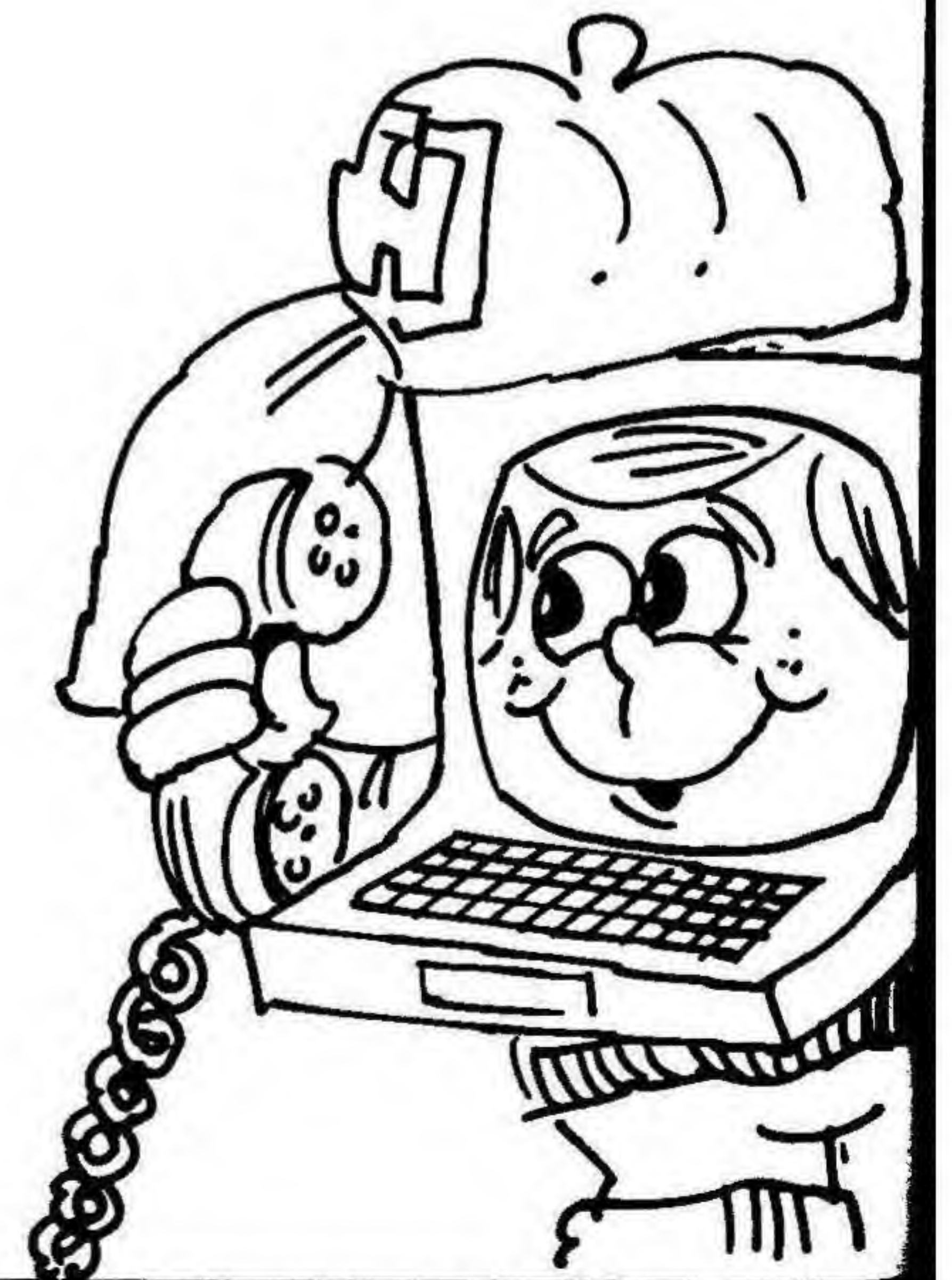


Initially Yours

The telephone rang and Herbie answered it. It was Mrs. Brown, the teacher at school. "Herbie, have you lost a disk?" she asked. "We found one with the initials HM on it. Is it yours?" Herbie turned a little red. "Well, aah, umm, must be! I wondered where that disk went." Herbie wrote his initials in computer print, just like Buzz wrote OK. Can you write your initials? Use the grid below to help you, then program it on the computer.

```

10 PRINT " "
100 PRINT " "
120 PRINT " "
130 PRINT " "
140 PRINT " "
150 PRINT " "
160 PRINT " "
170 PRINT " "
180 PRINT " "
190 PRINT " "
200 PRINT " "
210 PRINT " "
220 PRINT " "
230 PRINT " "
240 PRINT " "
250 PRINT " "
260 PRINT " "
```



A Sticky Friend

I have a new friend. He's a very nice guy. He's always smiling, too. Would you like to see a picture of my friend? When you actually write and RUN the program, he looks a little different than he does in the program LIST below. I did not draw his paws in because they were all sticky. I wonder where he could have been?

```

10 HOME
20 PRINT:PRINT:PRINT:PRINT
30 PRINT "%%  XXXXX  %%"
31 PRINT "%% XXXXX %%"
32 PRINT " %X      X%"
33 PRINT "  X      X  "
34 PRINT "  X * *  X  "
35 PRINT "  X  O  X  "
36 PRINT "  X (  ) X  "
37 PRINT "   X      X   "
38 PRINT "   XXXXX   "
39 PRINT "           "
40 PRINT "   BOSCOE   "
41 PRINT "HONEY BEAR"

```



PRINT with nothing after it makes a blank line. Many PRINT's with colons (:) in between make a blank line for every PRINT. Line 20 makes 4 blank lines.

A Sea Chanty

"Let's sail the ocean blue!" exclaimed Herbie. Mom and Dad said that would take too long. "But we'll sail all around Byte Bay and back. We'll sing a sailing song too. Sing the sailing song with the Micros.

```

5 PRINT " "
7 PRINT:PRINT:PRINT:PRINT
10 PRINT "SAILING"
20 PRINT " "
30 PRINT " "
40 PRINT " "
50 PRINT " "
60 PRINT " "
70 PRINT " "
80 PRINT " "
90 PRINT " "
91 PRINT " "
92 PRINT " "
93 PRINT " "
95 PRINT " "
97 PRINT "THE OCEAN BLUE "

```

[SHIFT] E for — (bottom lines)
 [SHIFT] R for — (top lines)
 [SHIFT] B for |
 [SHIFT] M for \
 [SHIFT] N for /

There are lots of different ways to number computer programs. If you are doing screen pictures the line numbering is very important. All of the picture part must have the *same number of digits* in the line number, otherwise you might have a crooked face or a leaky boat!

Numbers 1 to 9 have 1 digit.
 Numbers 20 to 99 have 2 digits.
 Numbers 100 to 999 have 3 digits.

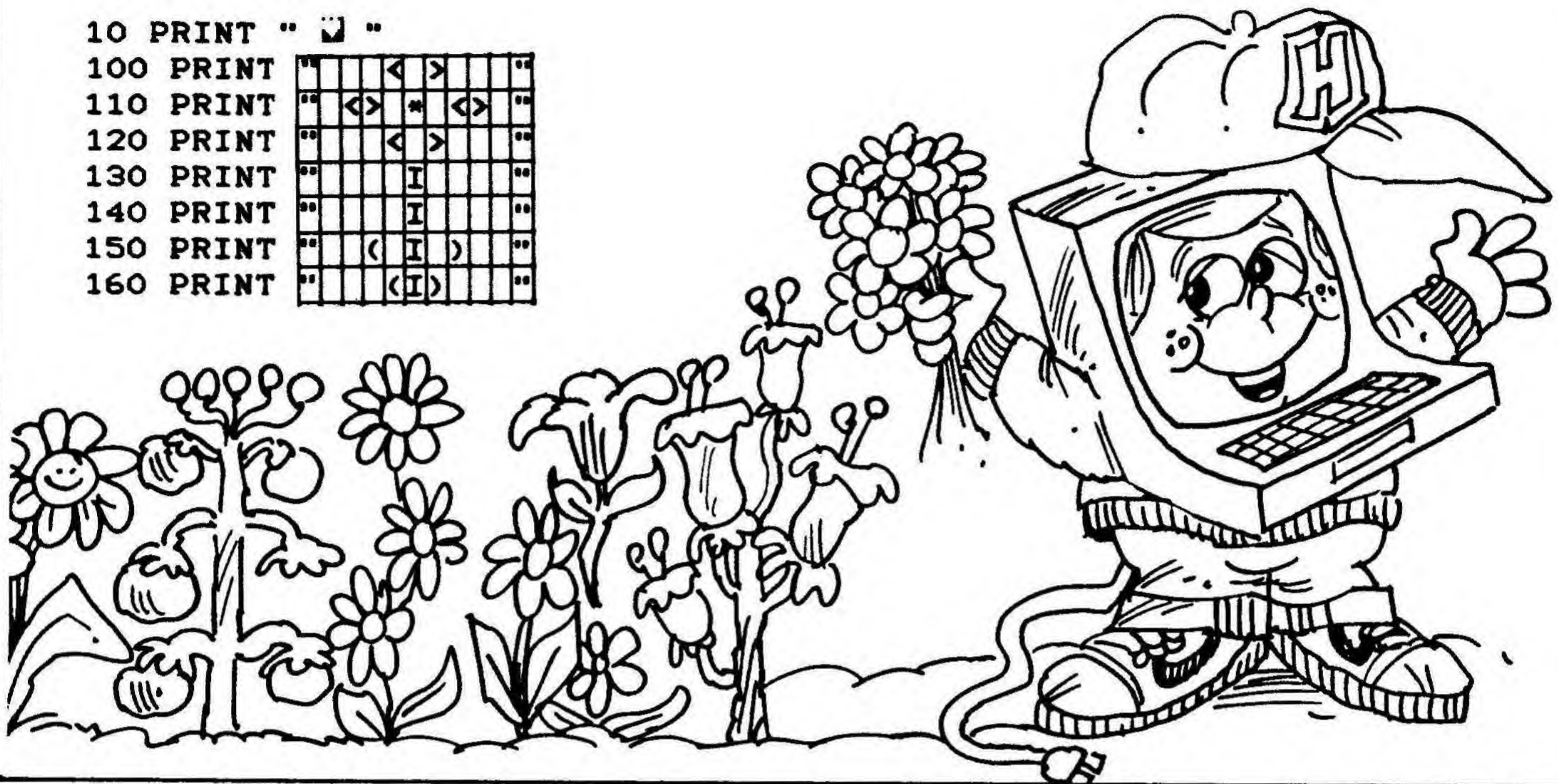
Spring Planting

I planted a garden. Some of my favorite plants came up. Type the program to see what grew. Wouldn't you like some in your garden?

```

10 PRINT "  "
100 PRINT
110 PRINT "  < >  "
120 PRINT "  < >  "
130 PRINT "  I  "
140 PRINT "  I  "
150 PRINT "  ( I )  "
160 PRINT "  ( I )  "

```



Be a Rainmaker

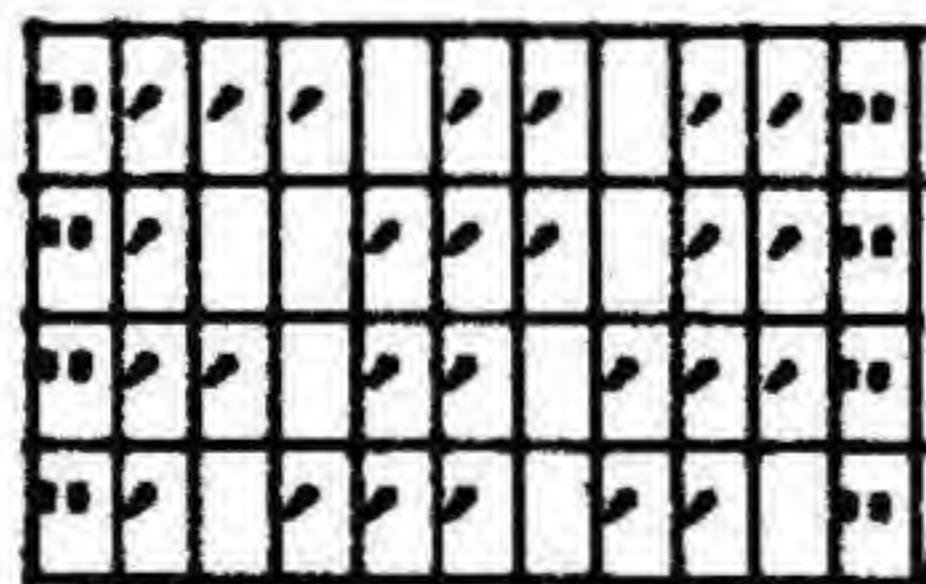
You can make weather on your computer! I wanted to keep my garden watered. I went out every day with my watering can. It was hard work. Then, one day, the sky got dark. Drips and drops fell. I ran inside so I wouldn't get rusty!

This is how you can water your computer garden, but DO NOT write NEW before you begin. If you do, the rain will not do your garden any good because all of the flowers will be gone!

```

20 PRINT
30 PRINT
40 PRINT
50 PRINT

```



Apostrophes
make the
rain.

Let's add some more. Try these two lines.

```

15 PRINT "APRIL SHOWERS"
170 PRINT "BRING MAY FLOWERS"

```



| Growing Season | |
|----------------|-----|
| 1 | 2 |
| 3 | 4 |
| 5 | 6 |
| 7 | 8 |
| 9 | 10 |
| 11 | 12 |
| 13 | 14 |
| 15 | 16 |
| 17 | 18 |
| 19 | 20 |
| 21 | 22 |
| 23 | 24 |
| 25 | 26 |
| 27 | 28 |
| 29 | 30 |
| 31 | 32 |
| 33 | 34 |
| 35 | 36 |
| 37 | 38 |
| 39 | 40 |
| 41 | 42 |
| 43 | 44 |
| 45 | 46 |
| 47 | 48 |
| 49 | 50 |
| 51 | 52 |
| 53 | 54 |
| 55 | 56 |
| 57 | 58 |
| 59 | 60 |
| 61 | 62 |
| 63 | 64 |
| 65 | 66 |
| 67 | 68 |
| 69 | 70 |
| 71 | 72 |
| 73 | 74 |
| 75 | 76 |
| 77 | 78 |
| 79 | 80 |
| 81 | 82 |
| 83 | 84 |
| 85 | 86 |
| 87 | 88 |
| 89 | 90 |
| 91 | 92 |
| 93 | 94 |
| 95 | 96 |
| 97 | 98 |
| 99 | 100 |

Can you make your garden grow with the April showers? Just make your flower stems grow by adding in lines between 120 and 140. You fill in the numbers.

```

___ PRINT  "  I  "
___ PRINT  "  I  "
___ PRINT  "  I  "

```

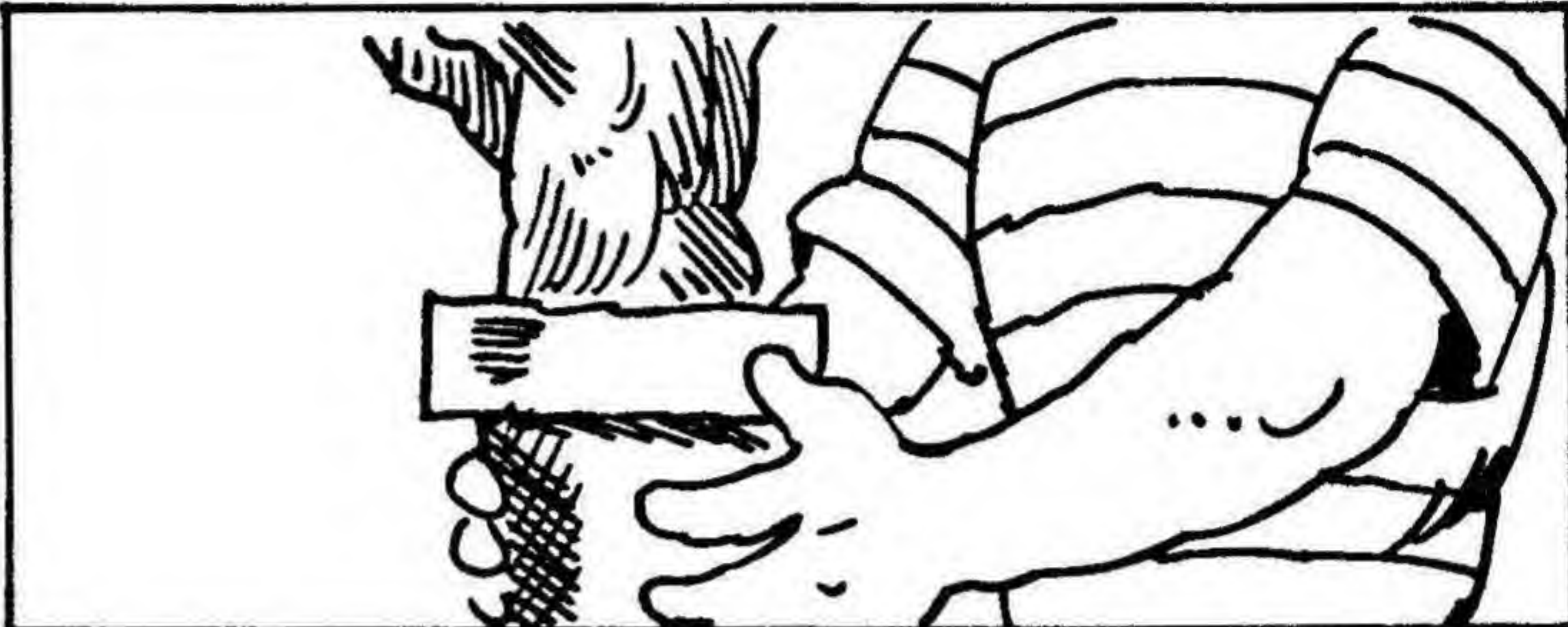


You could put more leaves on the stalk by writing in more lines, and leaves, between lines 160 and 170.

```

PRINT  ( I )
PRINT  ( I )
PRINT  ( I )

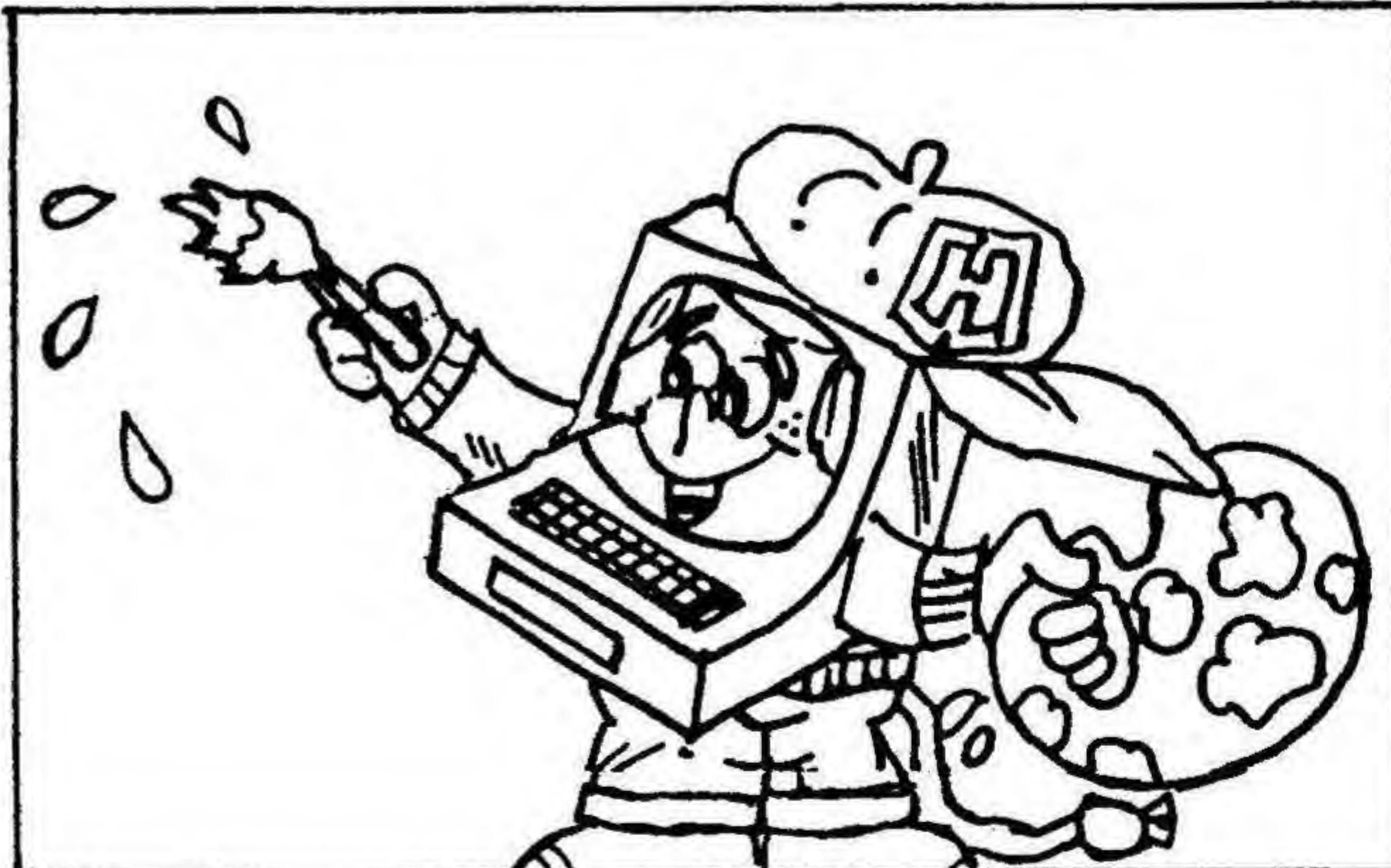
```



Maybe you can put something else in the picture. How about some . . . computer bugs! Oh, but they usually show up anyway, even if you don't put them there. Keep trying and you will get rid of them.

Drawing Board

Would you like to draw something of your own? It doesn't have to be a garden, but anything you like to draw. How about drawing your best friend or a nursery rhyme character? Let's see, there is Humpty Dumpty; Peter, Peter, Pumpkin Eater; the Dish that ran away with the Spoon . . . don't forget to put in the line numbers! Make sure they have the same number of digits.

[illegible]

Up, Up and Away

One day I wanted to get away for a little while, so I drew myself a balloon and up, up and away I went. Now you can do it too! But first build the balloon and the basket. Then I will teach you how to fly it.

```

90 PRINT "  "
100 PRINT "  IN MY BALLOON"
110 PRINT "  *****  "
120 PRINT "  *          *  "
130 PRINT "  *          *  "
140 PRINT "  *          *  "
150 PRINT "  *          *  "
160 PRINT "  *          *  "
170 PRINT "  *          *  "
180 PRINT "  *          *  "
190 PRINT "  *          *  "
200 PRINT "  *          *  "
210 PRINT "  *****  "
220 PRINT "  |          |  "
230 PRINT "  |          |  "
240 PRINT "  |          |  "
250 PRINT "  |          |  "
260 PRINT "  |          |  "
270 PRINT "  |          |  "
280 PRINT "  |          |  "
290 PRINT "  |          |  "

```



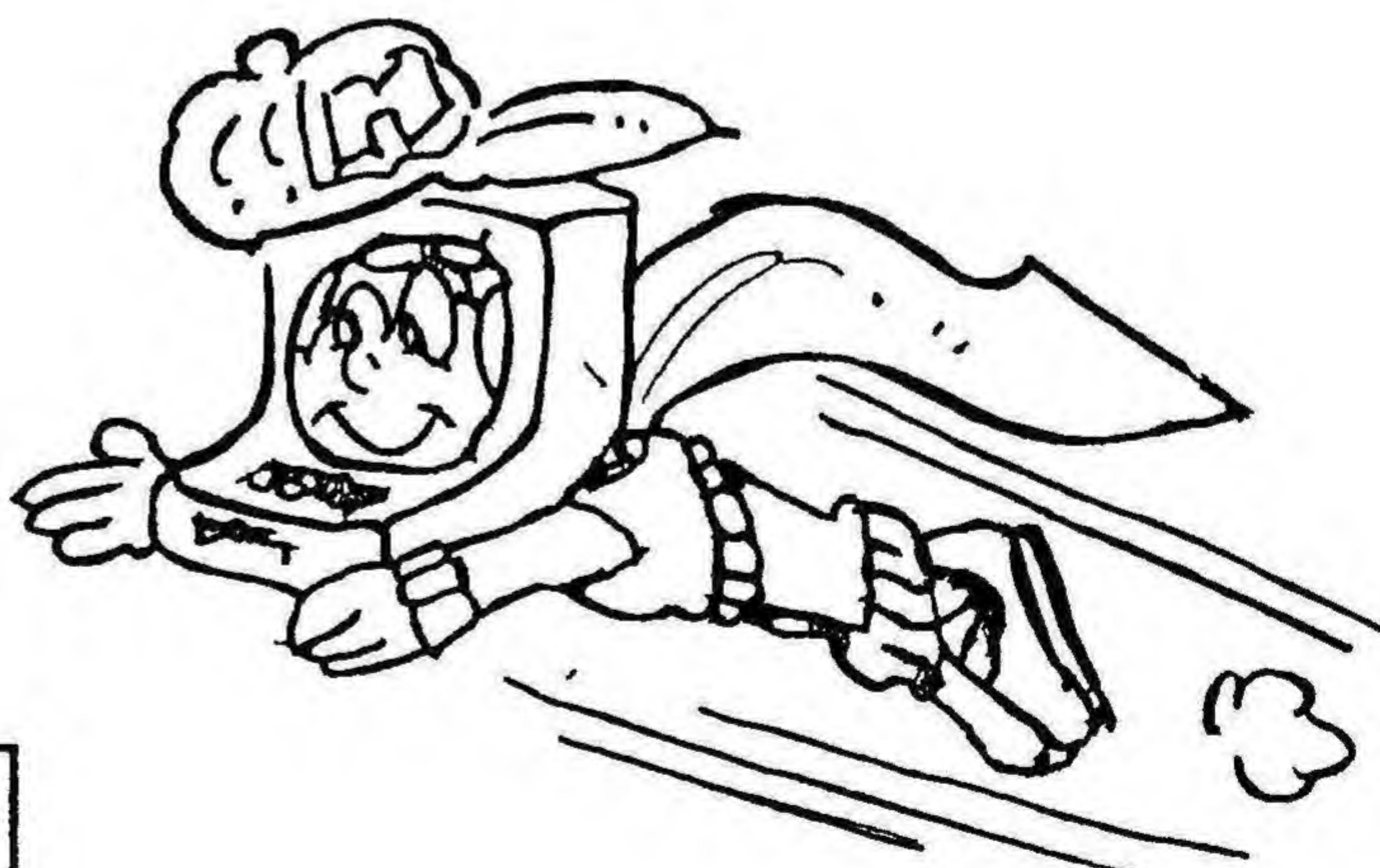
Flying Lessons

Flying lessons are starting! To fly the balloon we learn a new word, GOTO (pronounced Go To). Write this in your program.

```

295 FOR S=1 TO 300:NEXT S
300 GOTO 100

```



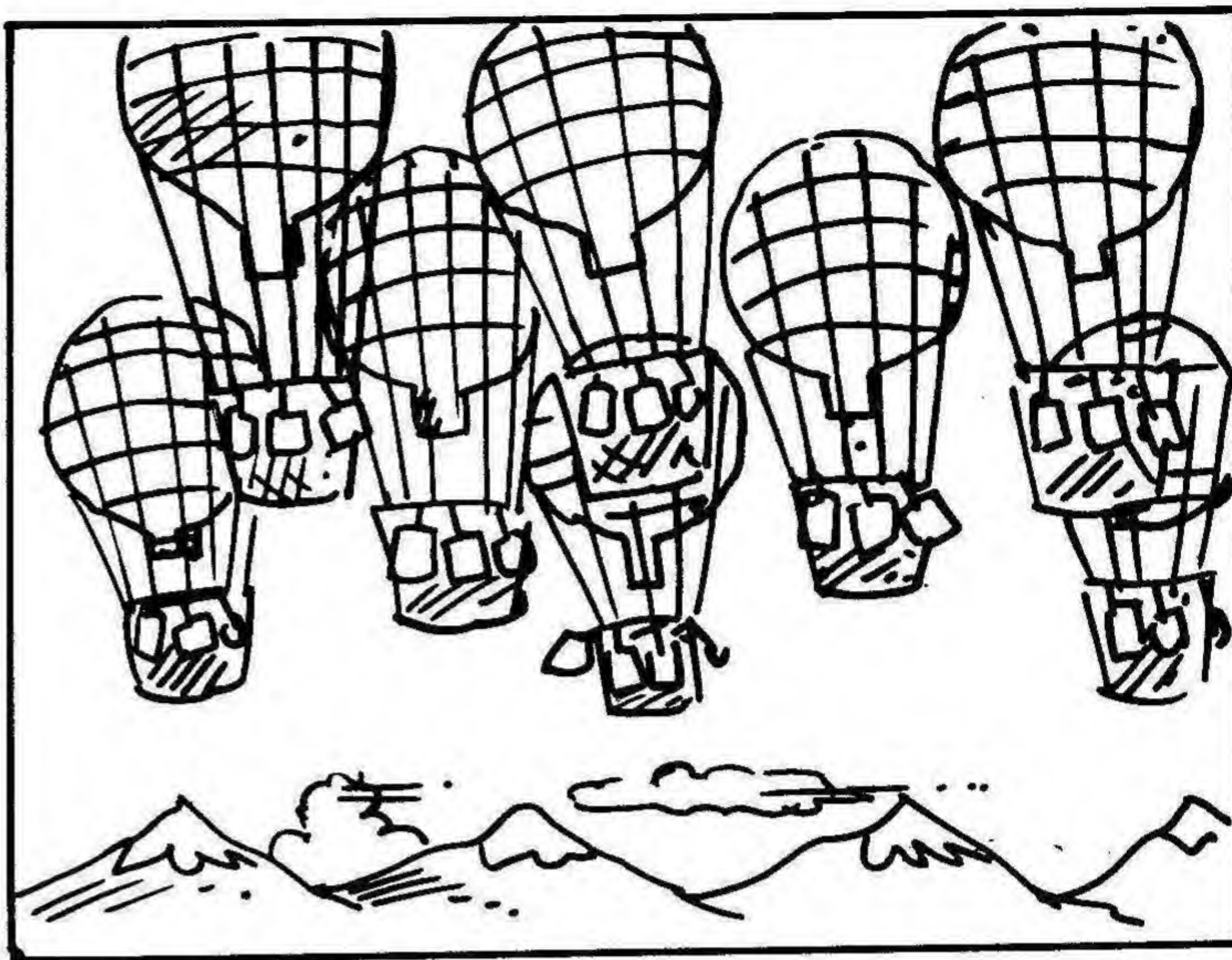
FOR _____ NEXT _____ (line 295)
slows down the balloon.

Does your balloon keep going, and going, and going? Did I hear you yell "HELP! It won't stop!" Herbie to the rescue! Press RUN/STOP to stop. Whew! Did you get it landed safely? Let's try that a few more times to get the hang of it. It is like learning to drive a car. You have to learn where the brakes are.

Air Space

Let's go for a balloon cruise again. RUN your program. Our balloon needs some space. Let's put some blank spaces in so the balloons won't run into each other.

```
297 PRINT:PRINT:PRINT:PRINT:PRINT
```



That should do it. Happy ballooning!

Basket Weaving Class

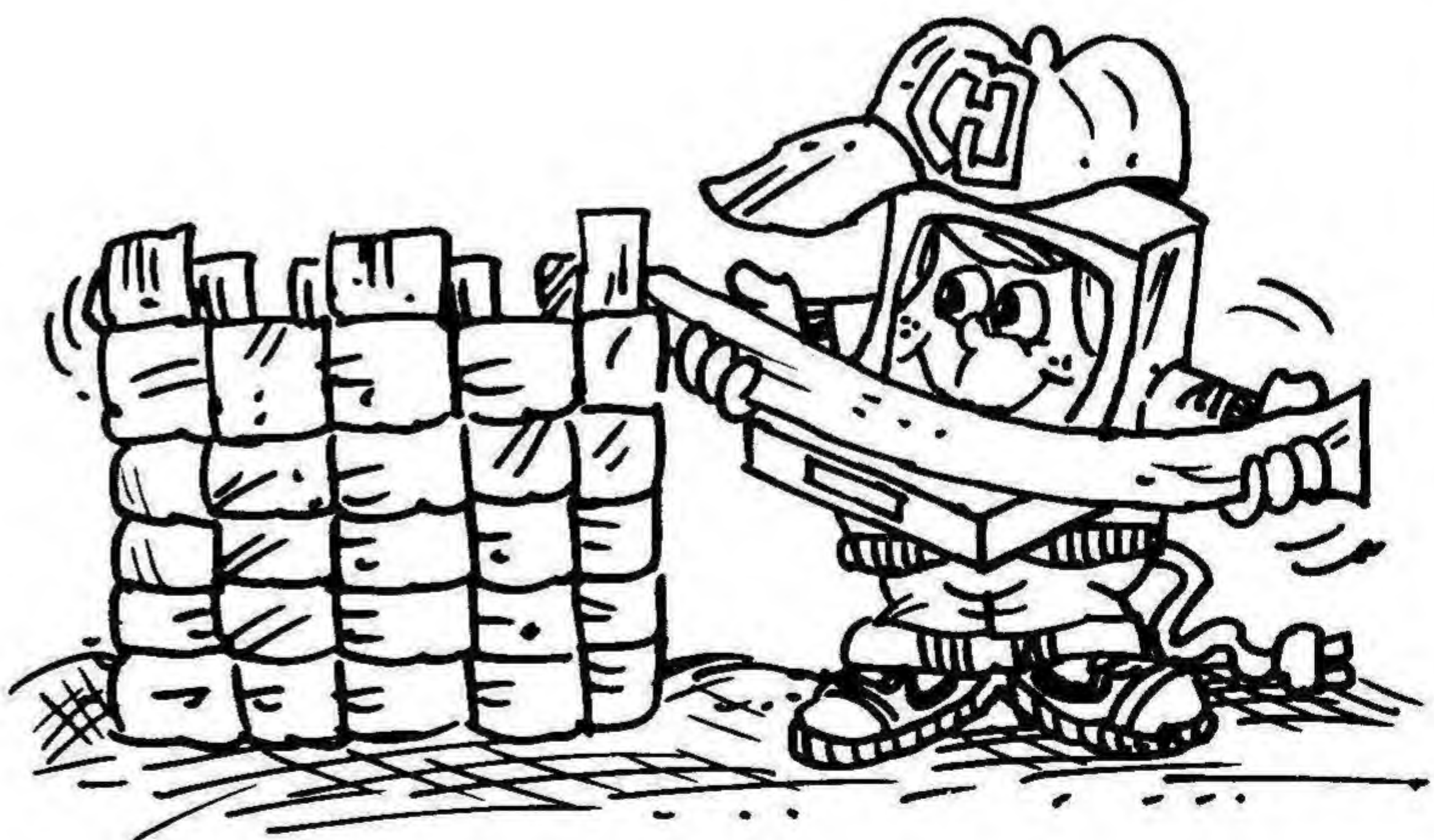
Let's go for a nice balloon cruise again. Where's the seatbelt? No seatbelt! Well, at least we should make sure the basket will hold together. Let's reweave it. I'll show you how.

```

240 PRINT "      | | | | | | | | | |"
250 PRINT "      | / \ / \ / \ / \ |"
260 PRINT "      | / \ / \ / \ / \ |"
270 PRINT "      | / \ / \ / \ / \ |"
280 PRINT "      | / \ / \ / \ / \ |"
290 PRINT "      | | | | | | | | | |"

```

| | |
|-----------|----------------------|
| [SHIFT] E | for — (bottom lines) |
| [SHIFT] R | for — (top lines) |
| [SHIFT] B | for |
| [SHIFT] M | for \ |
| [SHIFT] N | for / |



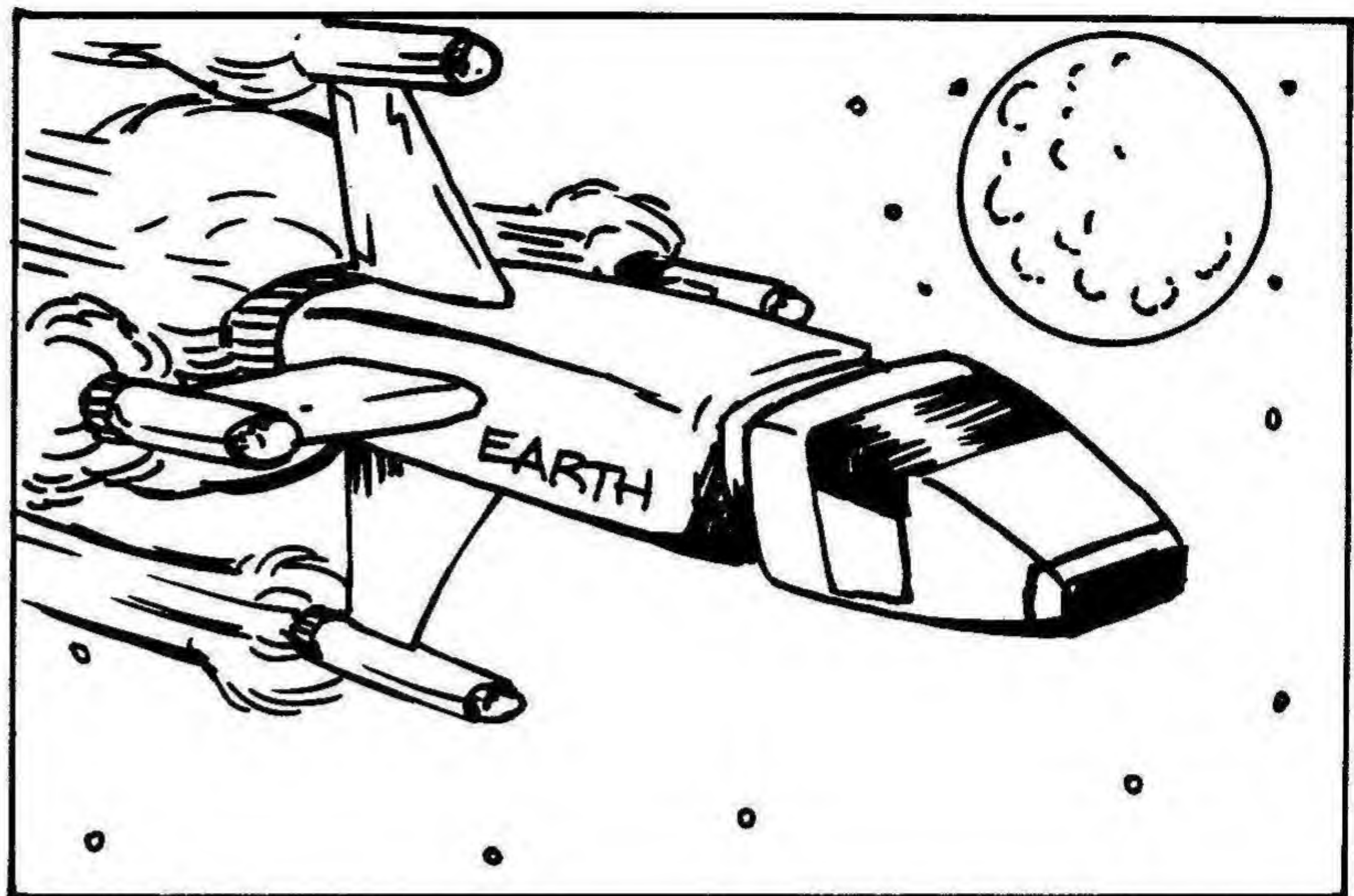
Did the basket come out looking good and solid? I would not want to fall out!

Off to Outer Space

Now that you can cruise a balloon, try speeding a spaceship.

```

90 PRINT " "
100 PRINT"
110 PRINT"
120 PRINT"
130 PRINT"
140 PRINT"
150 PRINT"
160 PRINT"
170 PRINT"
180 PRINT"
190 PRINT"
200 PRINT"
210 PRINT"
220 PRINT"
230 PRINT"
240 PRINT"
250 PRINT"
260 PRINT"
265 PRINT:PRINT:PRINT:PRINT:
270 GOTO 100
    
```



RUN/STOP
stops the spaceship.

Blast Off

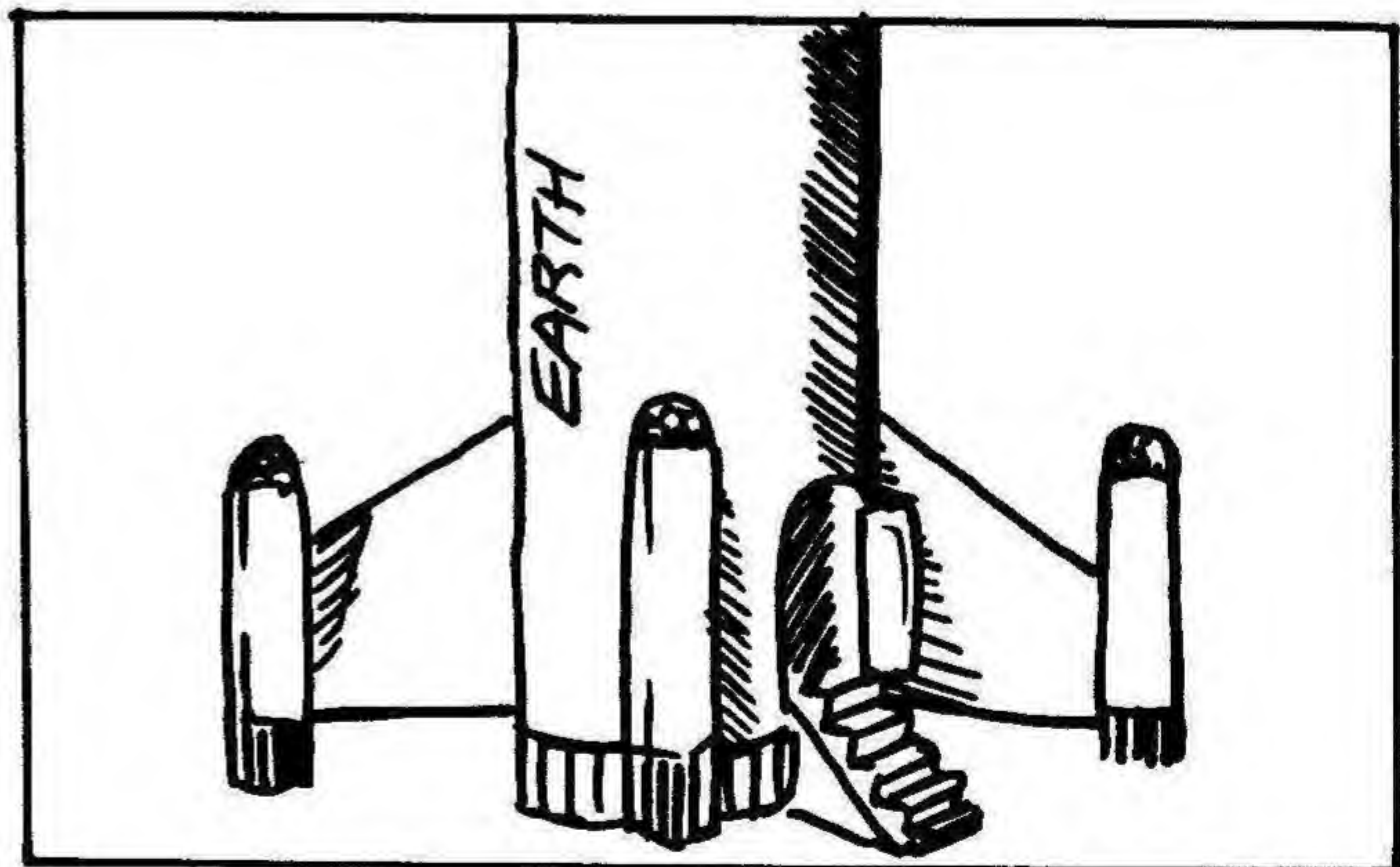
Okay, we are ready! Do NOT type NEW!

The Spaceship Earth will soon be departing for Uranus and points beyond. Hurry, get on board! Type these additions to your old spaceship program. Write LIST to check if you have your spaceship still in memory.

```

5 PRINT " "
10 LET N = 10
20 PRINT N
30 FOR Z=1 TO 200: NEXT Z
40 IF N = 1 THEN GOTO 70
50 LET N = N - 1
60 GOTO 20
70 PRINT:PRINT:PRINT
80 PRINT"BLAST OFF"
270
    
```

Delete line 270 by typing
270 and pressing
RETURN



Did you see a count down from 10, then BLAST OFF ? Great! If not, try to find the system bug. Check your typing carefully.

The Count Up

Count downs are fun, but let us learn how the computer counts up first.

```
5 PRINT " "
10 PRINT "I CAN COUNT"
20 LET N = 0
30 PRINT N
40 FOR Z = 1 TO 200:NEXT Z
50 LET N = N + 1
60 GOTO 30
```

← starting point of count

Stop with RUN/STOP

FOR____NEXT____ statement
(line 40) slows down the count
so that you can read it.

A VARIABLE is a letter that
equals a number. N is the
VARIABLE in this program.

LET gives a value to a
VARIABLE.

GOTO returns the computer to
line 30 which "counts" another
number.

Computer Cards

Of course you've heard of baseball cards. Well, Mark's Micro Mart sells computer cards. All the heroes of computer history are on them. Each card costs 3 cents. Quick! Learn to count by 3's.

```
5 PRINT " "
10 PRINT "I CAN COUNT
    BY 3'S"
20 LET N = 0
30 PRINT N
40 FOR Z = 1 TO 200:NEXT Z
50 LET N = N + 3
60 GOTO 30
```

You should see this on the
screen:

```
I CAN COUNT BY 3'S
0
3
6
9
```

Ooops! Prices went up. They
now cost 5¢ each. Run this
program.

```
5 PRINT " "
10 PRINT "I CAN COUNT
    BY 5'S"
20 LET N = 0
30 PRINT N
40 FOR Z = 1 TO 200:NEXT Z
50 LET N = N + 5
60 GOTO 30
```

Prices came down! They now
cost 4¢ each. Can you fill in the
blank to write this program?

```
5 PRINT " "
10 PRINT "I CAN COUNT
    BY 4'S"
20 LET N = 0
30 PRINT N
40 FOR Z = 1 TO 200:NEXT Z
50 LET N = N + ____
60 GOTO 30
```


Hide 'n Seek

We counted up, now let's count down! Let's play Hide and Go Seek. I will count down for you while you hide. Here's a count down program.

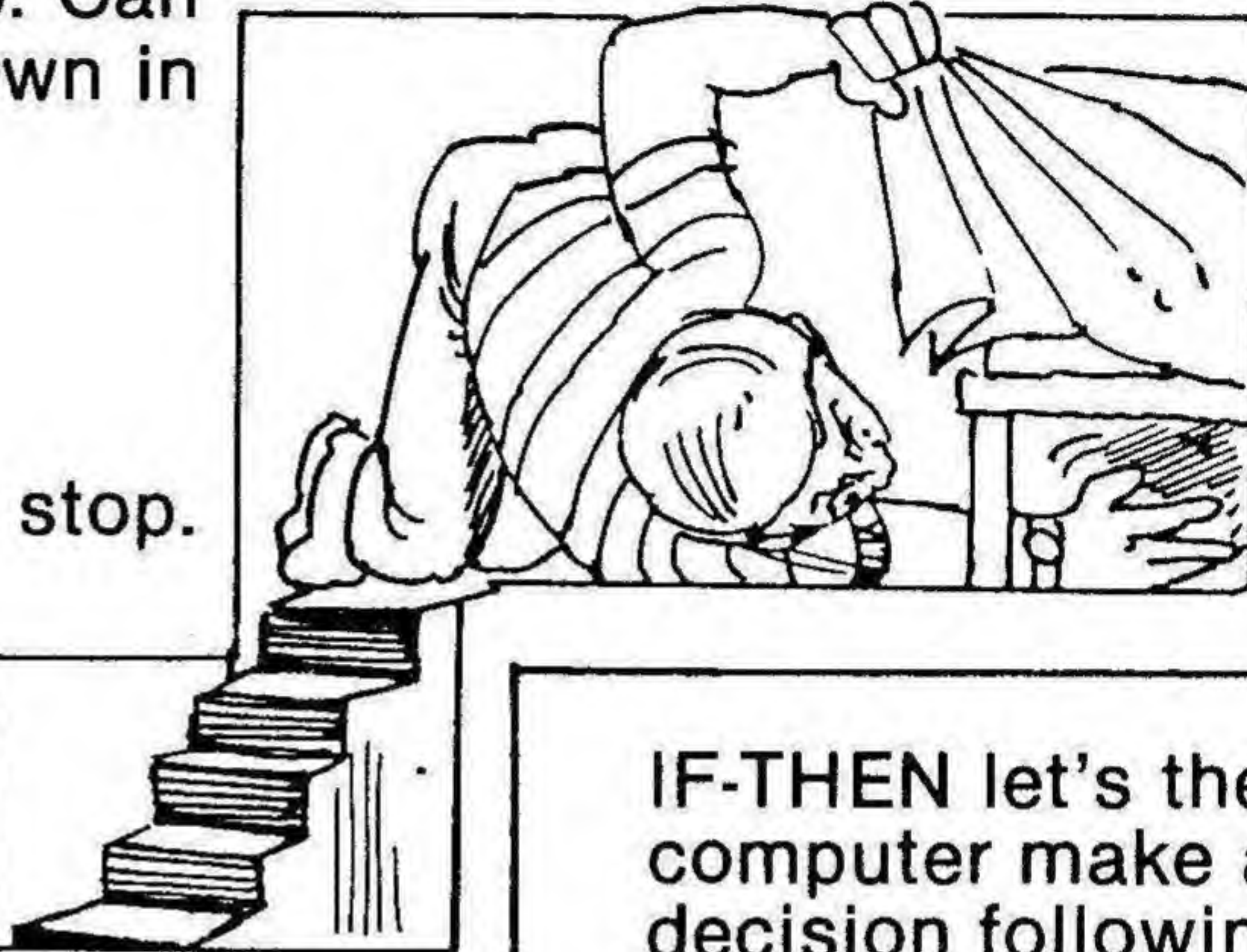
```
10 PRINT "COUNT DOWN"  
20 LET N = 0  
30 LET N = N - 1  
40 PRINT N  
50 GOTO 30
```

Ooops! That was not quite what you expected, was it? Instead of starting at 0, let's start at 100. Can you fill in the blank to change the count down in this program?

```
20 LET N = _____
```

Was that right? Not quite, you say. It didn't stop. How are we going to tell the computer to stop? Try

```
45 IF N = 0 THEN END
```



IF-THEN let's the computer make a decision following our instructions.

The Count Down

Hurray! We did it! Let's see if you can do some more count downs. If you want to find a really good place to hide, you need a BIG number to count down from because computers can count so fast. Why don't you fill in the blank below? Try different numbers!

```
10 PRINT "COUNT DOWN"  
20 LET N = _____  
30 LET N = N - 1  
40 PRINT N  
50 IF N = 0 THEN END  
60 GOTO 30
```

END means quit. In this program the computer returns to Line 30 again and again (GOTO 30) until the counting number, N, equals 0. Then it quits.



A-Counting We Will Go!

Herbie learned to sing! Do you know this song? "A-counting we will go! A-counting we will go! Hi-Ho the derry-o, A-counting we will go!" This is what Herbie does when he goes a-counting. Can you finish the programs for him?

Count by 2's.

```
10 PRINT "COUNTING"
  BY 2'S"
20 LET N = 0
30 PRINT _____
40 LET N = N + _____
50 GOTO 30
```

Count by 2's,
starting at 100.

```
10 PRINT "COUNTING"
  BY 2'S"
20 LET N = _____
30 PRINT N
40 LET N = _____ + _____
50 GOTO _____
```

Count by 2's,
starting at 100, and
ending at 500.

```
10 PRINT "COUNTING"
  BY 2'S"
20 _____
30 _____
35 IF N = 500 THEN
  _____
40 _____
50 GOTO _____
```

Remember, you do not have to rewrite the entire program each time. Just add the line number that is needed for the new instruction.

Backwards A-Counting

"Go will we a-counting! Go will we a-counting! Derry-o the Ho-Hi, Go will we a-counting!" I think Herbie wants to count backwards and is just being silly. Let's go will we a-counting backwards for him.

Count backwards by 5's.

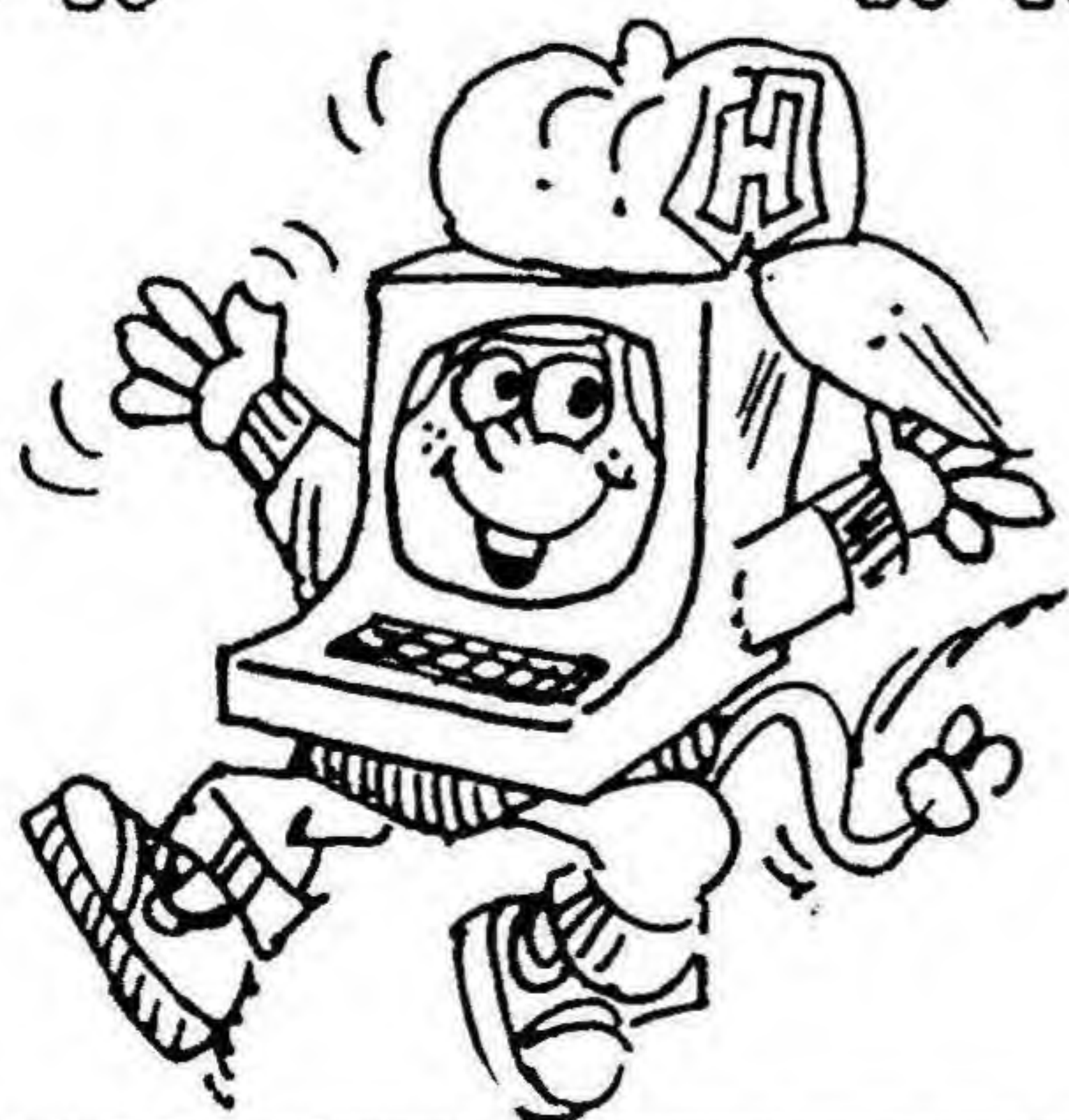
```
10 PRINT "BACKWARDS"
  BY 5'S"
20 LET N = 0
30 PRINT N
40 LET N = N - _____
50 _____ 30
```

Count backwards by 5's,
starting at 400.

```
10 PRINT "BACKWARDS"
  BY 5'S"
20 LET N = _____
30 _____
40 LET N = _____
50 GOTO 30
```

Count backwards by 5's,
starting at 400, and
ending at 100.

```
10 PRINT "BACKWARDS"
  BY 5'S"
20 LET N = _____
30 _____
40 LET N = _____
45 IF _____
  THEN _____
50 _____
```



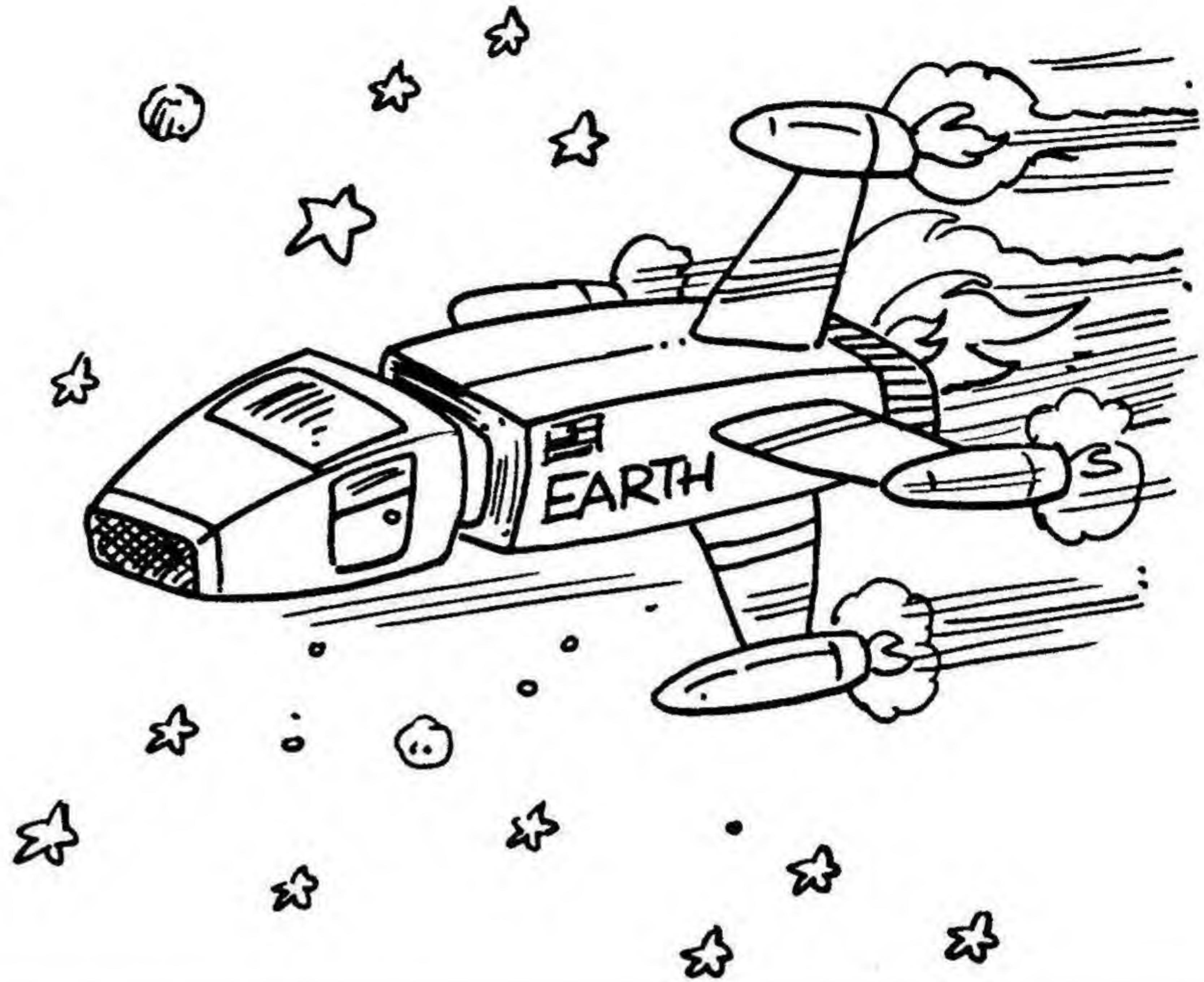
Ready for Takeoff

I'm getting ready for another space flight. I have everything I need,—water, vitamins, and even a SPACE BAR! I better remember how to do the blast off again. This time I'm going to count down from a larger number so that I have more time to get ready.

```

10 PRINT "  "
20 LET N = 1000
30 PRINT N
40 LET N = N - 1
50 IF N = 0 THEN GOTO 70
60 GOTO 30
70 PRINT:PRINT
80 PRINT "BLAST OFF"

```



Take Me Along

Can you send your own spaceship up? Fill in the blanks below to build your own. Look at the other programs for help. But let me know when it's time to blast off. I want to come too!

```

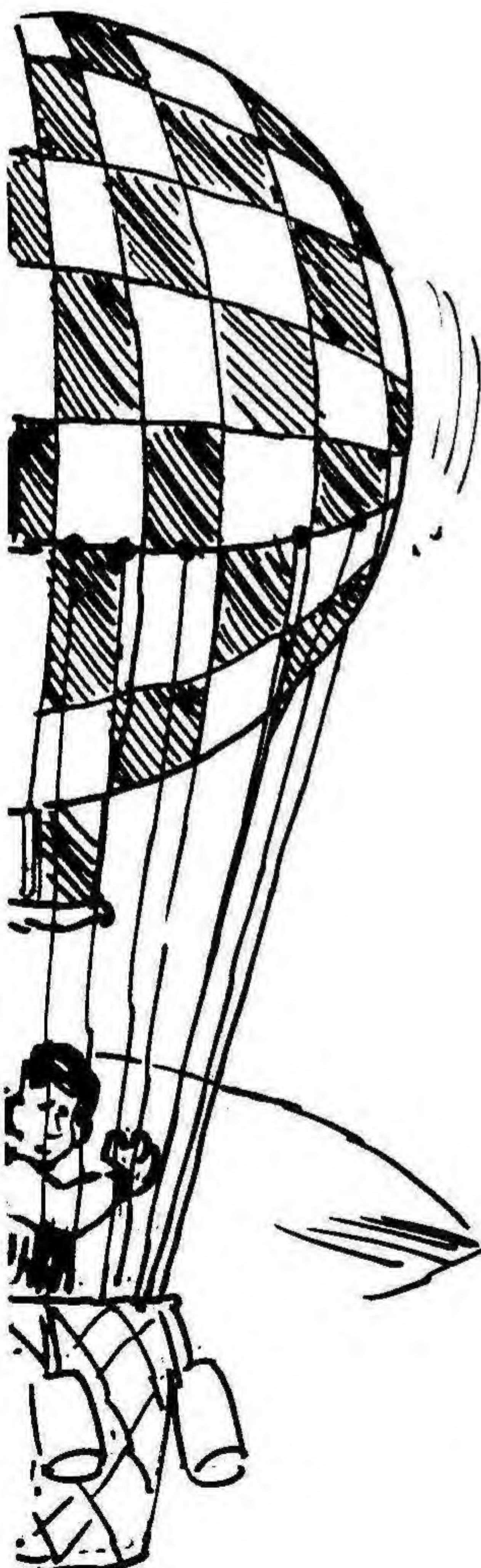
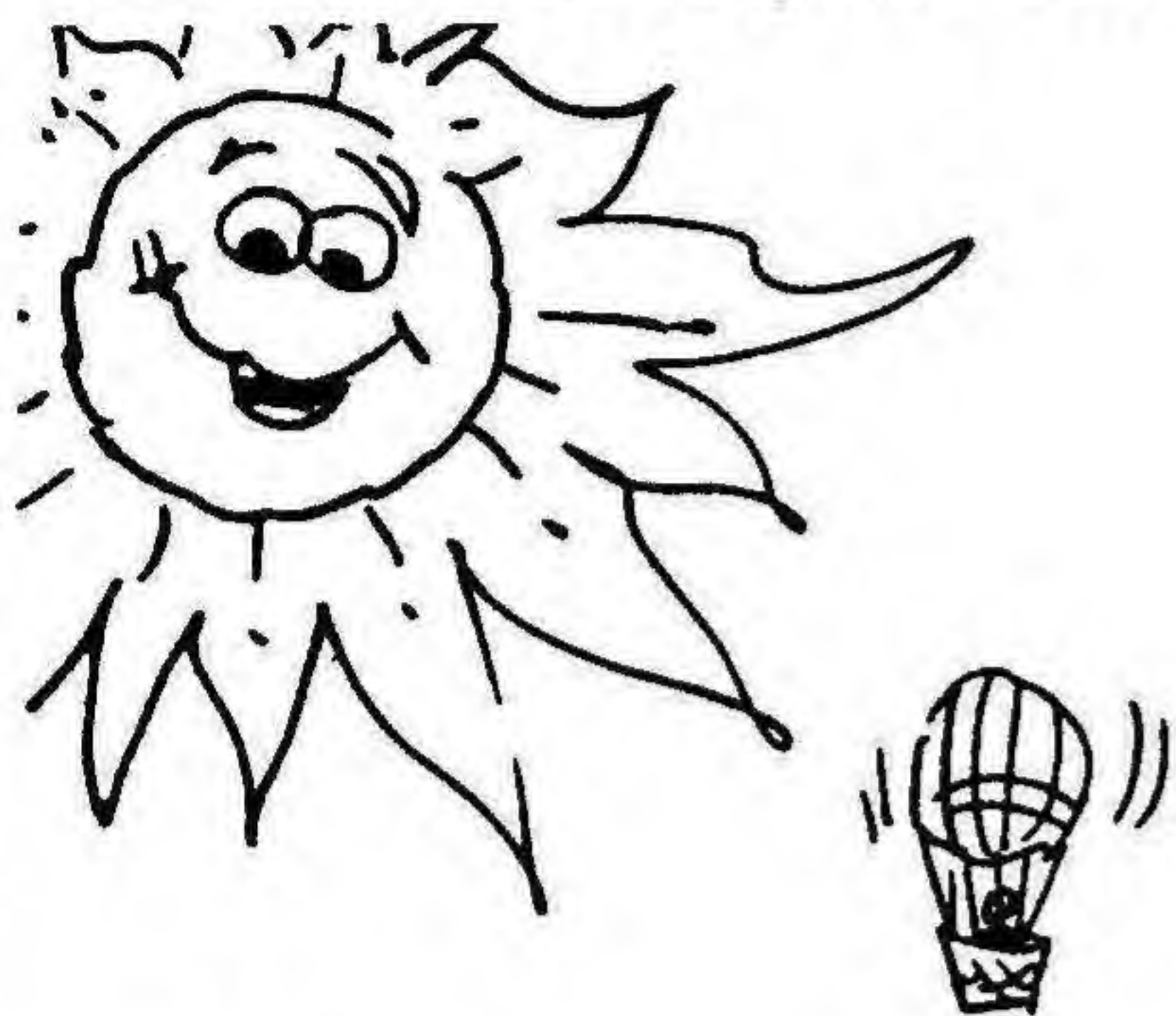
10 PRINT "      "
20 LET N = _____
30 PRINT _____
40 LET N = _____ - _____
50 IF N = 0 THEN GOTO _____
60 GOTO _____
70 _____
80 PRINT "BLAST OFF"

```

| | | |
|-----|-------|---|
| 110 | PRINT | " |
| 120 | PRINT | " |
| 130 | PRINT | " |
| 140 | PRINT | " |
| 150 | PRINT | " |
| 160 | PRINT | " |
| 170 | PRINT | " |
| 180 | PRINT | " |
| 190 | PRINT | " |
| 200 | PRINT | " |
| 210 | PRINT | " |
| 220 | PRINT | " |

A Balloon Blast

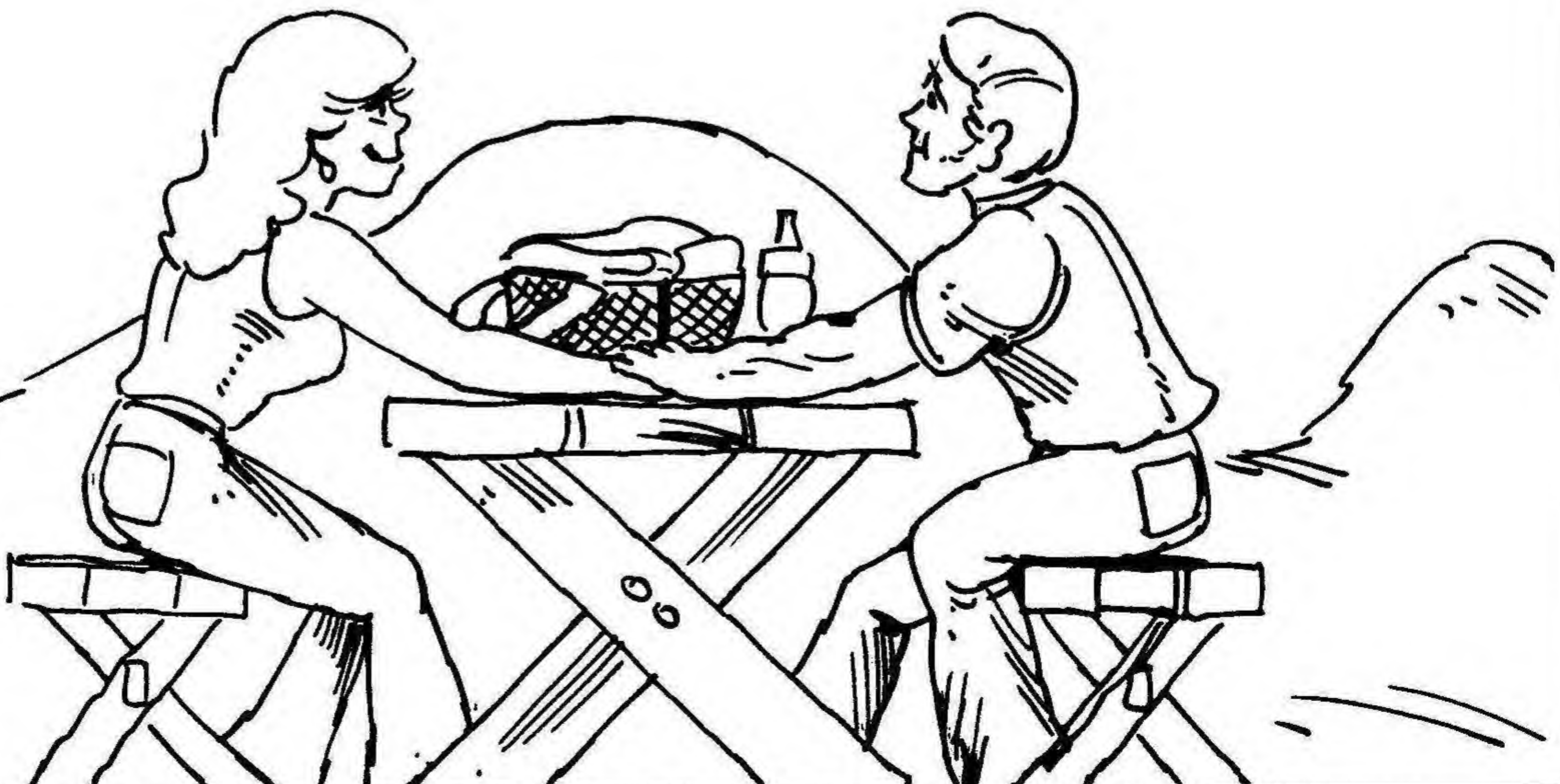
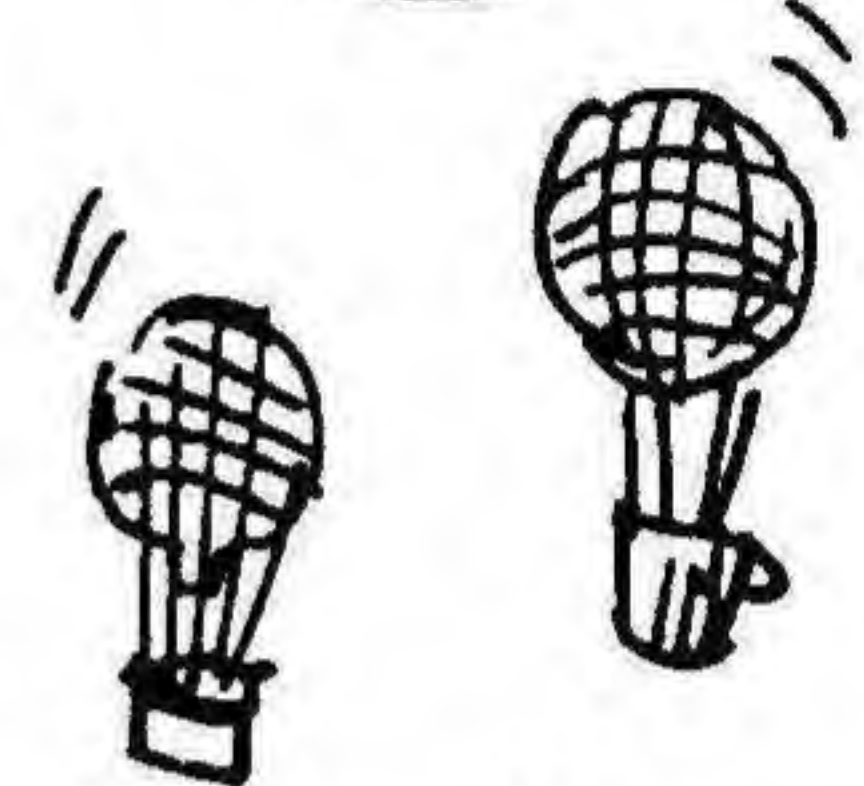
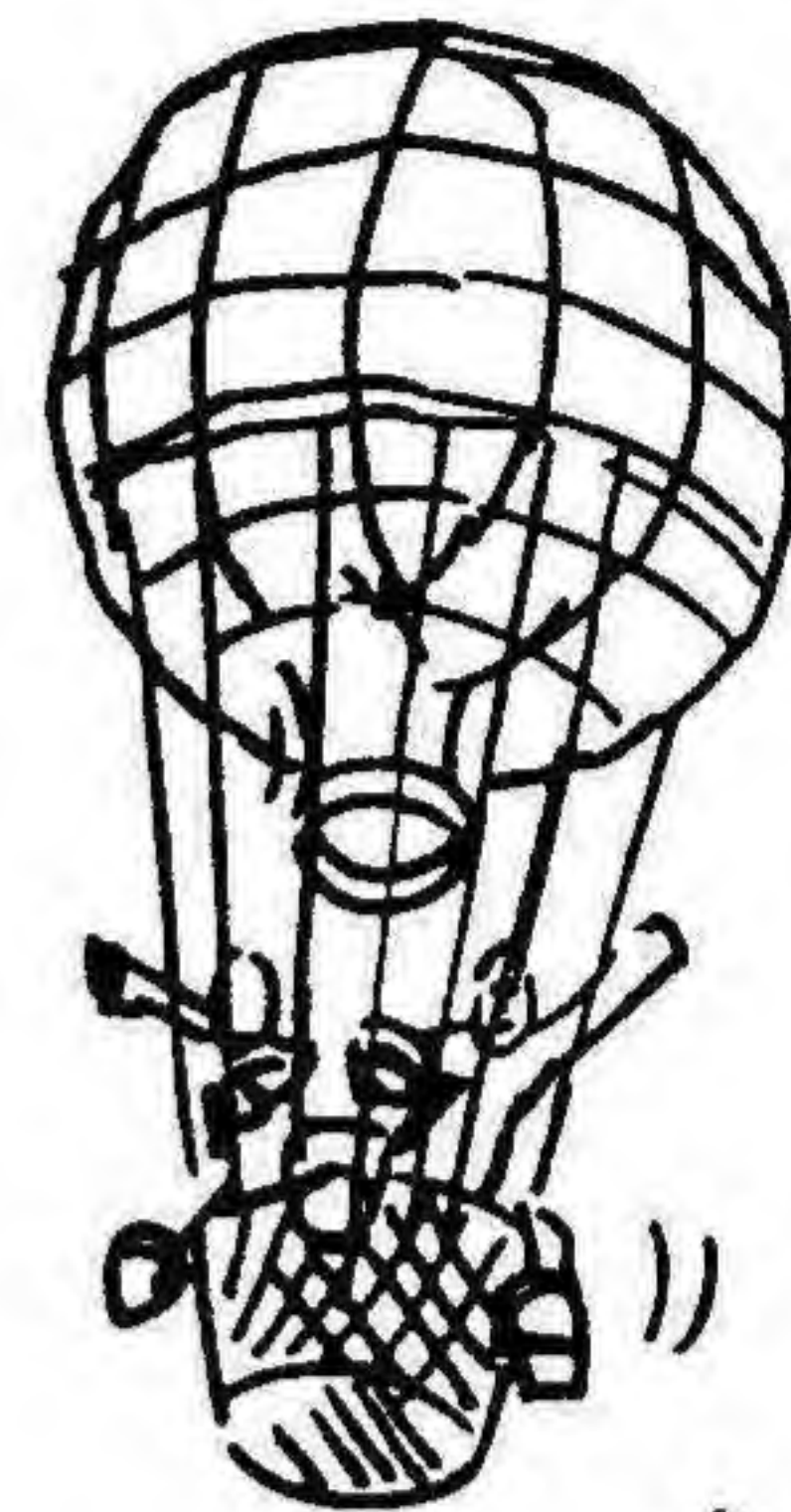
Taking off in a balloon can be as exciting as taking off in a spaceship. But let's have a count up to take off in the balloon. On the count of 20, it's time to fly! Fill in the blanks below to build your balloon and balloon sendoff.



```

10 _____
20 LET N = 0
30 _____ N
40 FOR Z =1 TO 400:NEXT Z
50 _____ N = N + 1
60 IF N = _____ THEN _____ 80
70 GOTO _____
80 PRINT:PRINT
90 PRINT "IT'S TIME TO FLY!"
95 _____
100 PRINT " "
110 PRINT " "
120 PRINT " "
130 PRINT " "
140 PRINT " "
150 PRINT " "
160 PRINT " "
170 PRINT " "
180 PRINT " "
190 PRINT " "
200 PRINT " "
210 PRINT " "
220 PRINT " "
230 PRINT " "
240 PRINT " "
250 PRINT " "
260 PRINT " "
270 PRINT " "
280 PRINT " "
290 PRINT " "
300 PRINT " "
310 GOTO _____

```



A Sad Story

This is a sad story! My mom baked a chocolate-raisin-peach-marshmallow-supreme pie. It's my very favorite. Well, my brother brought home a squirrel, a possum, and several other animals that followed him. Type the program below to see what happened next. Then you will see why I think this is a sad story.

```
10 LET A = 5
20 LET B = 2
30 PRINT A + B
40 PRINT "ANIMALS ATE THE PIE!"
```

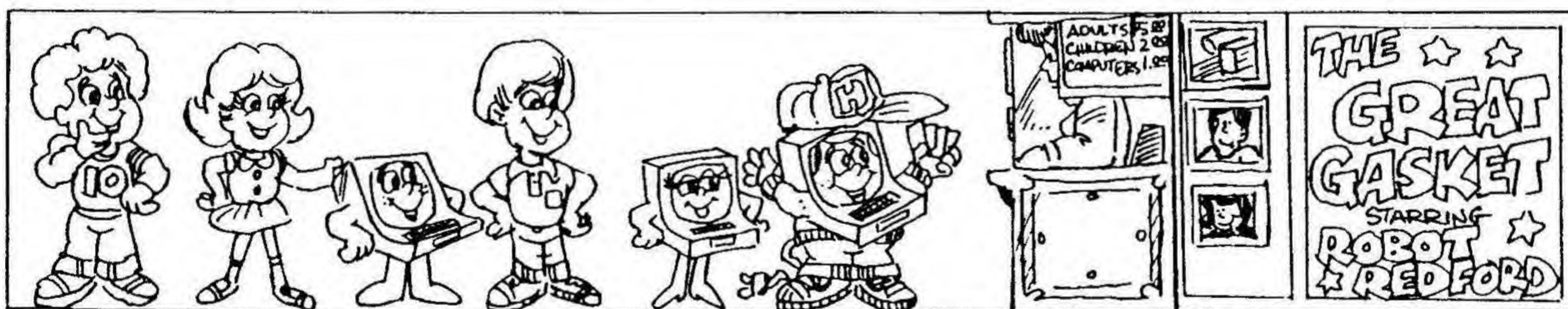
PRINT with no quotation marks tells the computer to look for numbers. Even if letters follow PRINT, with no quotation marks, the computer knows the letters are VARIABLES and stand for numbers.



Did the computer tell you 7?
That's right! Seven of them!

A Happy Story

Free passes for the movies! Hurrah! I have 12 passes. I'm going to take my friends Danny, Matt, and Lisa, my sister Sparky, and my brother Buzz to the movies to see Robot Redford. Let me see, how many passes will I have left if we all go? Type the program and find out.



```
10 PRINT " "
20 LET MP = 12
30 LET P = 6
40 PRINT "THERE WILL BE "
50 PRINT MP - P
60 PRINT "MOVIE PASSES LEFT."
```

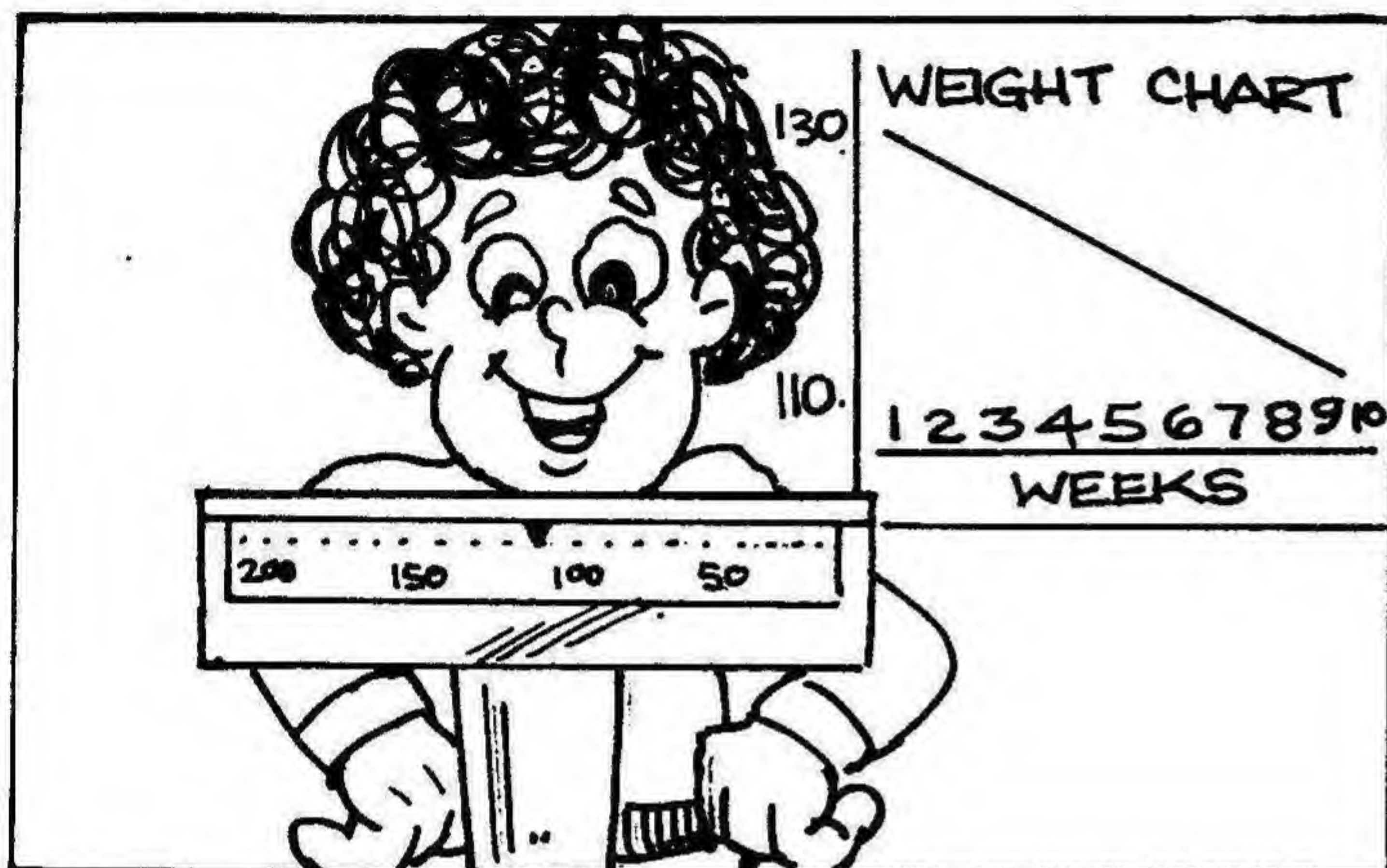
The letters called VARIABLES can use almost any combination of letters to stand for numbers. We choose MP for movie passes and P for persons.

Did the computer tell you there were 6 passes left? Good! That is enough for us to go again and see Robot Redford's next movie!

A Light Friend

My friend Jason lost two pounds a week for ten weeks. Type the program below. You'll see how much Jason lost altogether.

```
10 PRINT " "
20 LET W = 10
30 LET P = 2
40 PRINT "JASON LOST"
50 PRINT W * P
60 PRINT "POUNDS IN 10 WEEKS."
```



The computer does multiplication using * to mean "times."

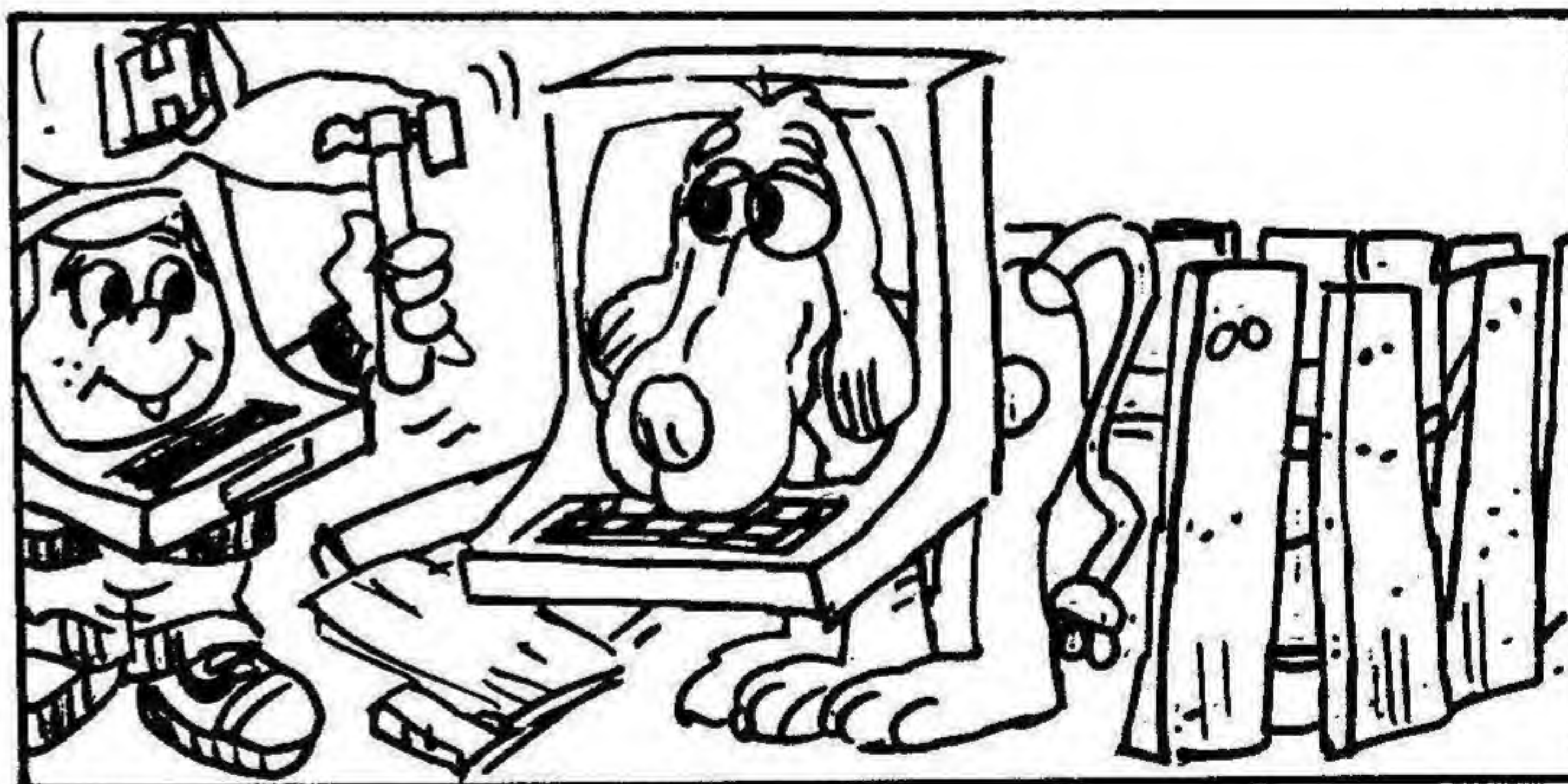
We choose P to be pounds and W to be weeks. The **variables** could have been X and Y, or A and B. It makes no difference to the computer, but it is easier for the programmer (you) to understand.

Did the computer say 20? Good. You did the program correctly.

An Electrical Friend

Meet my dog. He has blinking lights and an electrical cord for a tail! We have to build a fence to keep him in the yard. Let's see how big his new yard is going to be. We have 48 yards of fencing and 4 sides . . . well, just do the program and your computer will figure it out.

```
10 PRINT " "
20 LET F = 48
30 LET S = 4
40 PRINT "EACH SIDE OF THE
   NEW DOG YARD WILL BE "
50 PRINT F/S
60 PRINT "YARDS LONG."
```



The computer does division using / to mean "divide."

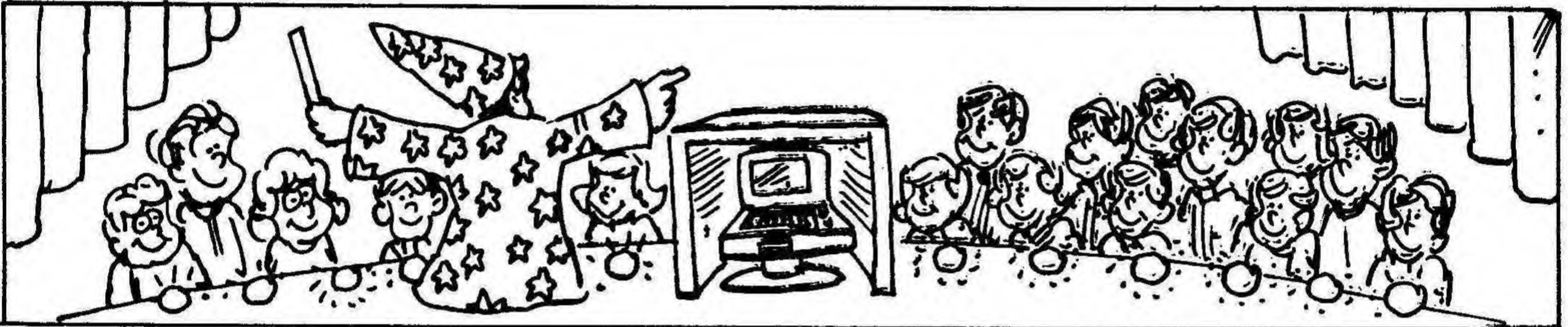
Did your computer tell you the new dog yard will be 12 yards long? It's right. You typed the program in very well!

Hocus Pocus

Herbie went to a magic show. The magician was full of tricks. He could do this trick with just a couple of seconds in between. Copy and then RUN your program to see the trick.

```
10 PRINT " 🎩 "
20 PRINT "TYPE A NUMBER."
30 INPUT N
40 LET A = N * 11
50 PRINT "HERE IS A NUMBER 11
   TIMES BIGGER."
60 PRINT A
```

INPUT tells the computer to wait while you put in an answer. The computer stores your answer in a VARIABLE. In this program the VARIABLE is named N for Number.



That was a pretty nifty trick! But of course the magician's secret was a hidden computer. If you put in 859 did the computer tell you 9449? RUN it again and see. If so, you are as good as the magician!

Abracadabra

This was another magic trick Herbie saw. The people "oohed" and "aahed." How could the magician do this so fast? Herbie knew!

```
10 PRINT " 🎩 "
20 PRINT "HOW OLD ARE YOU?"
30 INPUT Y
40 LET D = Y * 365
50 PRINT "YOU ARE "D" DAYS OLD!"
60 PRINT
70 GOTO 20
```

Stop the program with RUN/STOP and RESTORE.

Did it say REDO FROM START? You put in letters and the computer wants a number only. So do what it says and REDO your answer.

Is the number glued to a word when you RUN your program? If so, retype line 50 paying attention to the blank spaces after ARE and before DAYS.

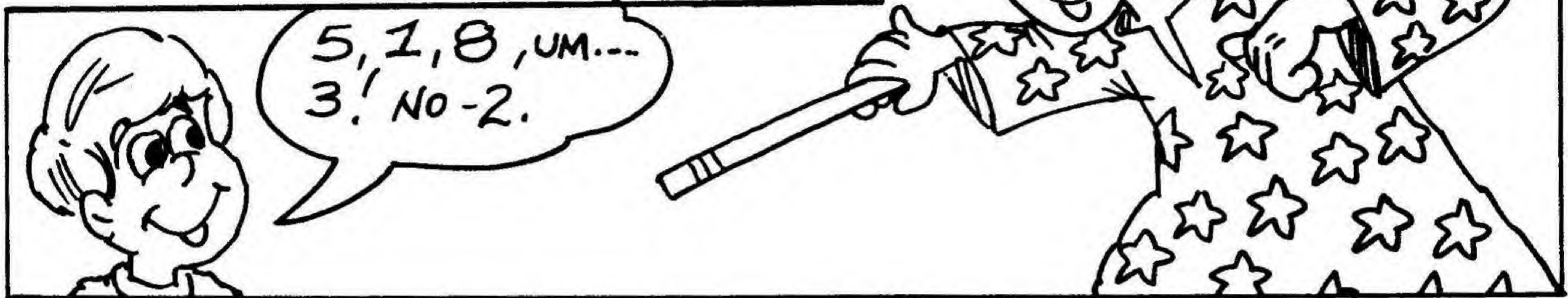


Herbie wanted to check the magician out. Herbie told him he was 9, and the magician said he was 3285 days old. Is that what your computer says? RUN it and see. If so, you are right!

A Magic Game

The magician said he would play a game. He had a secret number. Type in this program to see what the secret number is.

```
10 PRINT " "
20 PRINT "GUESS A NUMBER BETWEEN
    1 AND 10"
30 INPUT N
40 IF N = 7 THEN GOTO 60
50 GOTO 20
60 PRINT "YOU GUESSED THE SECRET
    NUMBER SEVEN. AREN'T YOU SMART!"
```

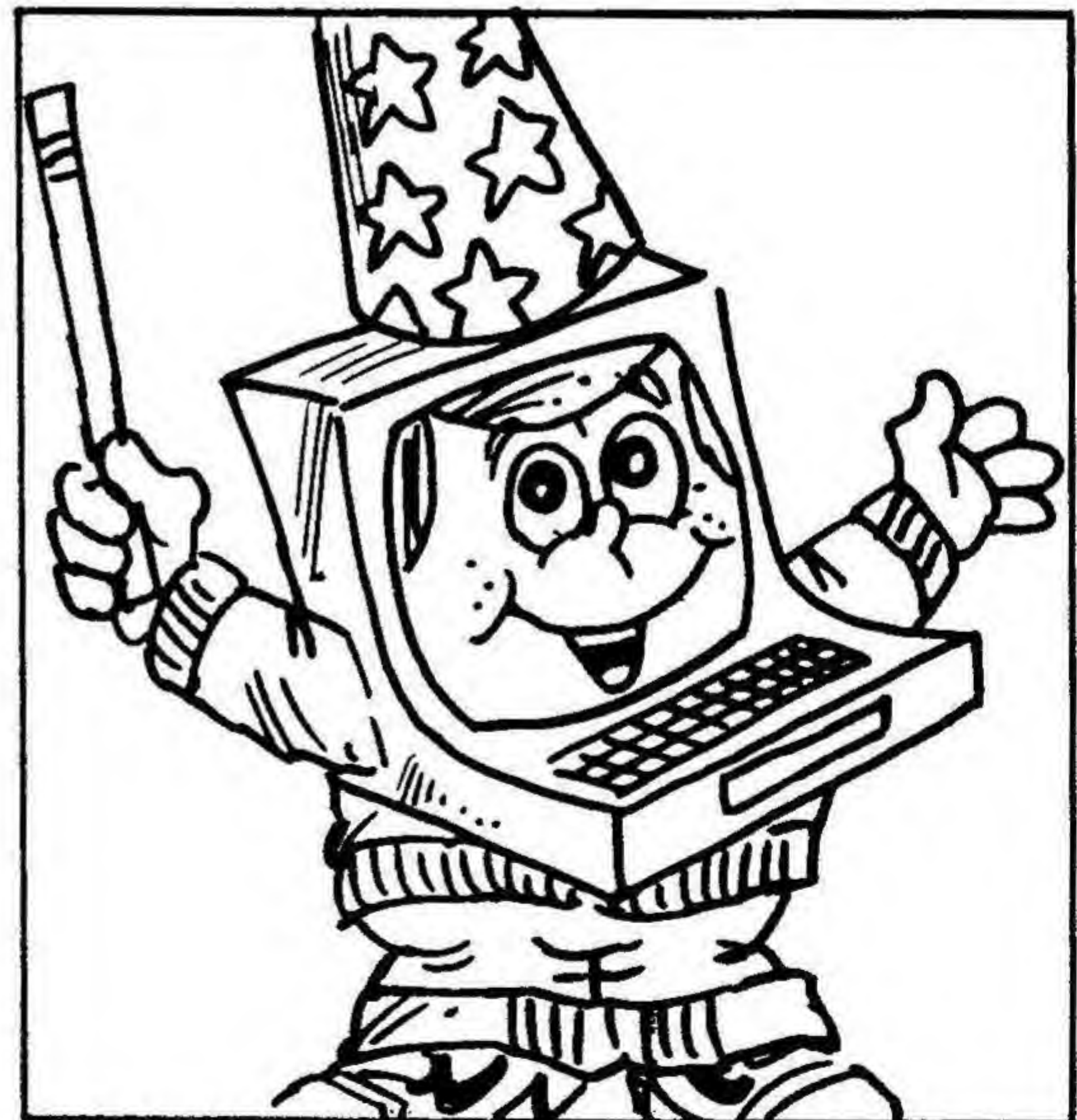


Herbie liked the magician. You could not lose at his game; he always gave you more chances until you won. Is that what happened when you typed in the program? If not, check your typing carefully.

Be a Magician

How would you like to be a magician? Try writing your own Magic Number Game. Don't let anyone else see it while you are writing it. Fill in the blanks below and write this program on your computer. Then you can be the magician and let someone guess. Put your secret number in on line 40.

```
10 _____
20 PRINT "GUESS A NUMBER BETWEEN
    1 AND 10"
30 _____ N
40 IF N = _____ THEN GOTO 60
50 GOTO _____
60 PRINT "_____"
```



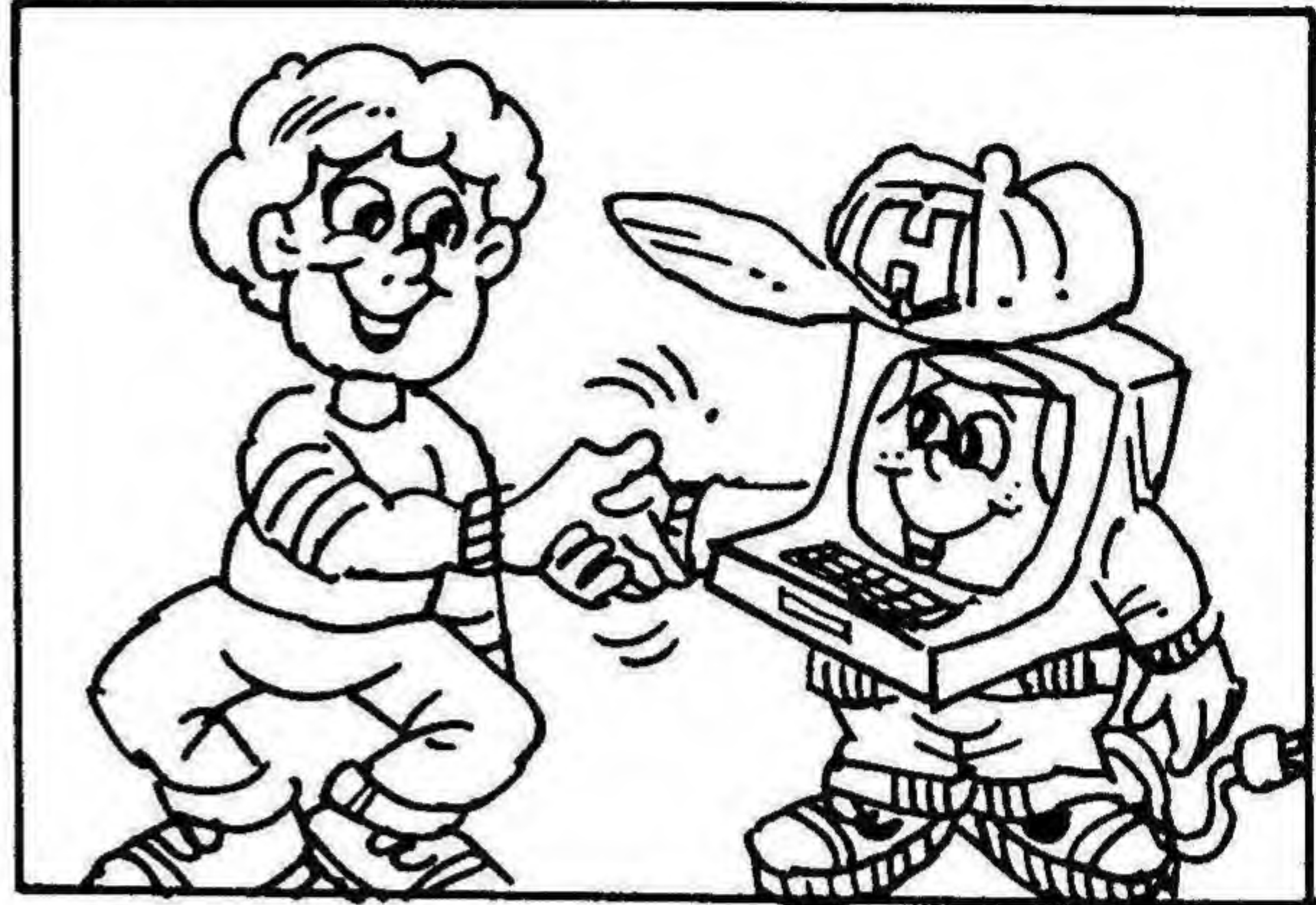
Did it work? Congratulations! Maybe you can join the Magicians' Club now!

A Polite Program

Herbie's Mom and Dad taught him to have good manners. Herbie knows what to say when he meets someone. See what he says when you introduce yourself to him. Type this program in as written.

```
10 PRINT " 👤 "  
20 PRINT "MY NAME IS HERBIE."  
30 PRINT "WHAT IS YOUR NAME?"  
40 INPUT N$  
50 PRINT "THAT IS A NICE NAME, "  
    N$  
60 PRINT "GLAD TO MEET YOU!"
```

N\$ is a STRING VARIABLE. This means it is treated as a word, and not as a number. To INPUT **words** you need to have the \$.

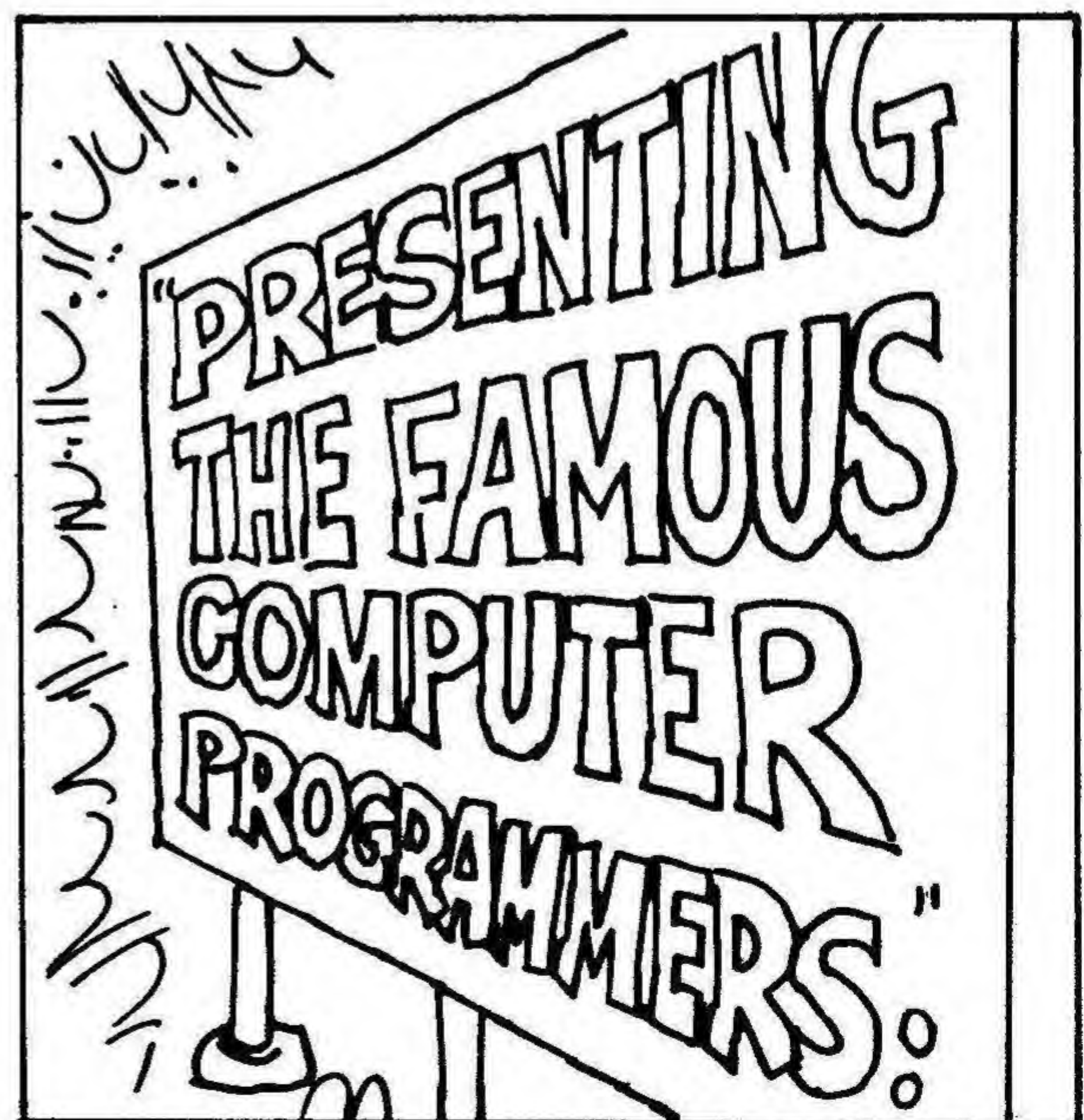


Was Herbie polite to you? Did he call you by name? If so, you know you did a good job typing in the program. RUN it again and introduce Herbie to someone else.

In the Limelight

Fran and Dan love programming. They are good programmers. They want the whole world to know so they put this on their computer. By now you are a good programmer too. Tell the world through the computer. Add the name of a friend who is your programming pal.

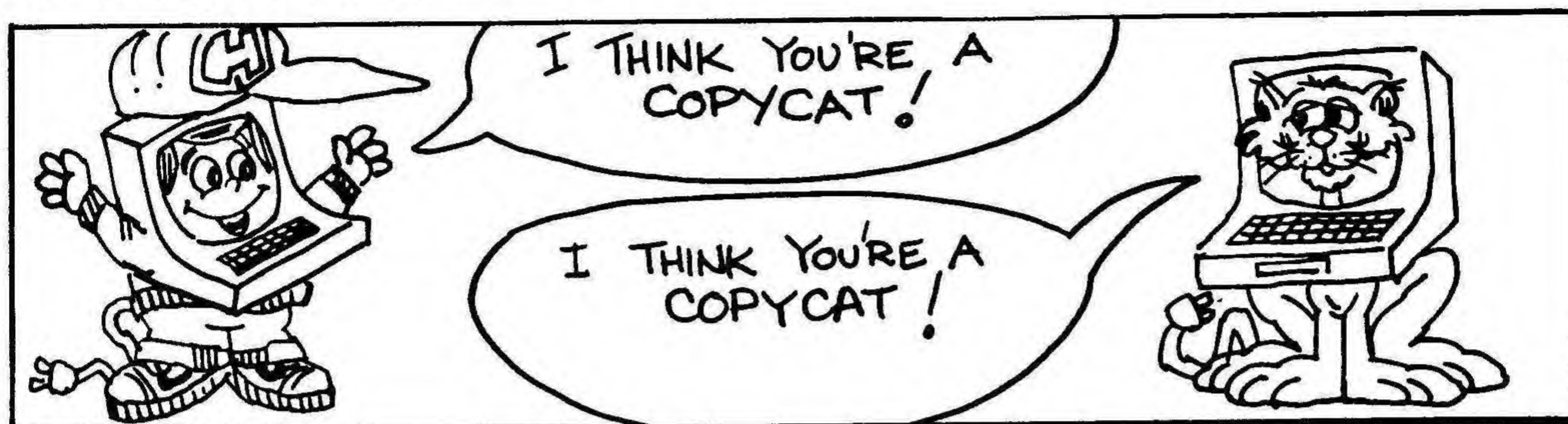
```
10 PRINT " 👤 "  
20 PRINT "TYPE YOUR NAME."  
30 INPUT N$  
40 PRINT "TYPE A NAME OF A  
    FRIEND."  
50 INPUT F$  
60 PRINT " 👤 "  
70 PRINT "PRESENTING THE FAMOUS"  
80 PRINT "COMPUTER PROGRAMMERS:"  
90 PRINT  
100 PRINT N$ AND "F$"
```



Did you see your names as the world famous programmers? Good!

Copy Cat

My cat is a computer cat. He is a real pest sometimes. He is also a copy cat. Just look and see how he is programmed.



```
10 PRINT " "
20 PRINT "SAY SOMETHING."
30 INPUT S$
40 PRINT S$
50 PRINT
60 GOTO 20
```

Stop with RUN/STOP
and RESTORE.

If you type STOP THAT, does the computer say STOP THAT right back? Yes, then you know you have a real copy cat on your hands, and you typed the program correctly.

Tickets for Two

Where would you like to go on your vacation? Tahiti? Paris? Disneyland? I want to go to Timbuktu! I did the program below and I got two tickets to Timbuktu. Try it and see what you get!

```
10 PRINT " "
20 PRINT "WHERE WOULD YOU LIKE  
TO GO ON VACATION?"
30 INPUT W$
40 PRINT " "
50 PRINT:PRINT:PRINT:PRINT
60 PRINT "HERE ARE TWO PAID  
TICKETS FOR YOU TO:"
70 PRINT W$!"
80 PRINT:PRINT:PRINT
  "SINCERELY,"
90 PRINT
100 PRINT "YOUR-EVERY-WISH-  
GRANTED TRAVEL AGENCY"
110 PRINT:PRINT:PRINT:PRINT
120 GOTO 20
```

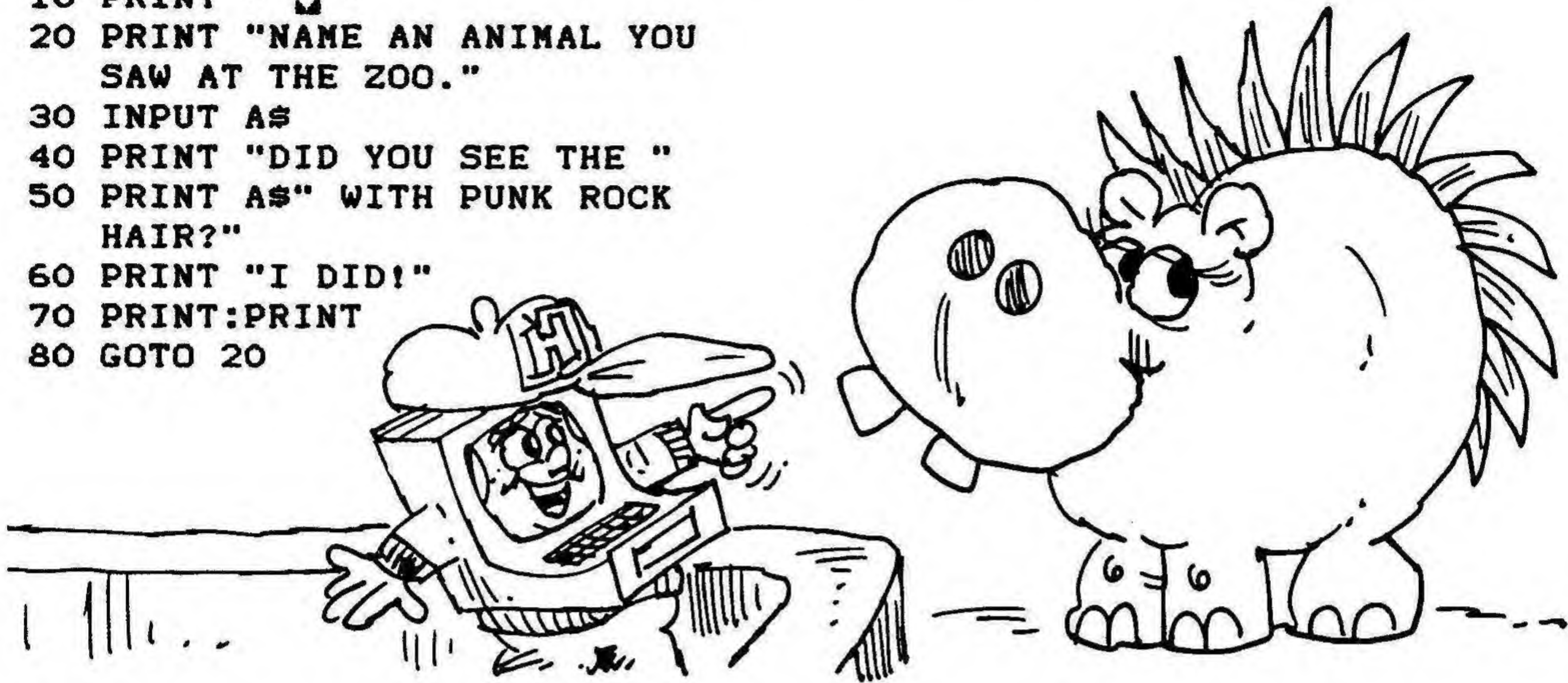


Did you get two free tickets? Good. If not, check your typing and numbering carefully. Remember how to stop the program? RUN/STOP and RESTORE will do it.

A "Zooney" Hairdo

"Have you been to the zoo lately?" Herbie asked Lisa. She told him yes. "Name an animal you saw," Herbie said. The table was starting to shake because Herbie was laughing so hard. Soon Lisa was laughing very hard too. See what Herbie's program was.

```
10 PRINT "  "
20 PRINT "NAME AN ANIMAL YOU
   SAW AT THE ZOO."
30 INPUT A$
40 PRINT "DID YOU SEE THE "
50 PRINT A$" WITH PUNK ROCK
   HAIR?"
60 PRINT "I DID!"
70 PRINT:PRINT
80 GOTO 20
```

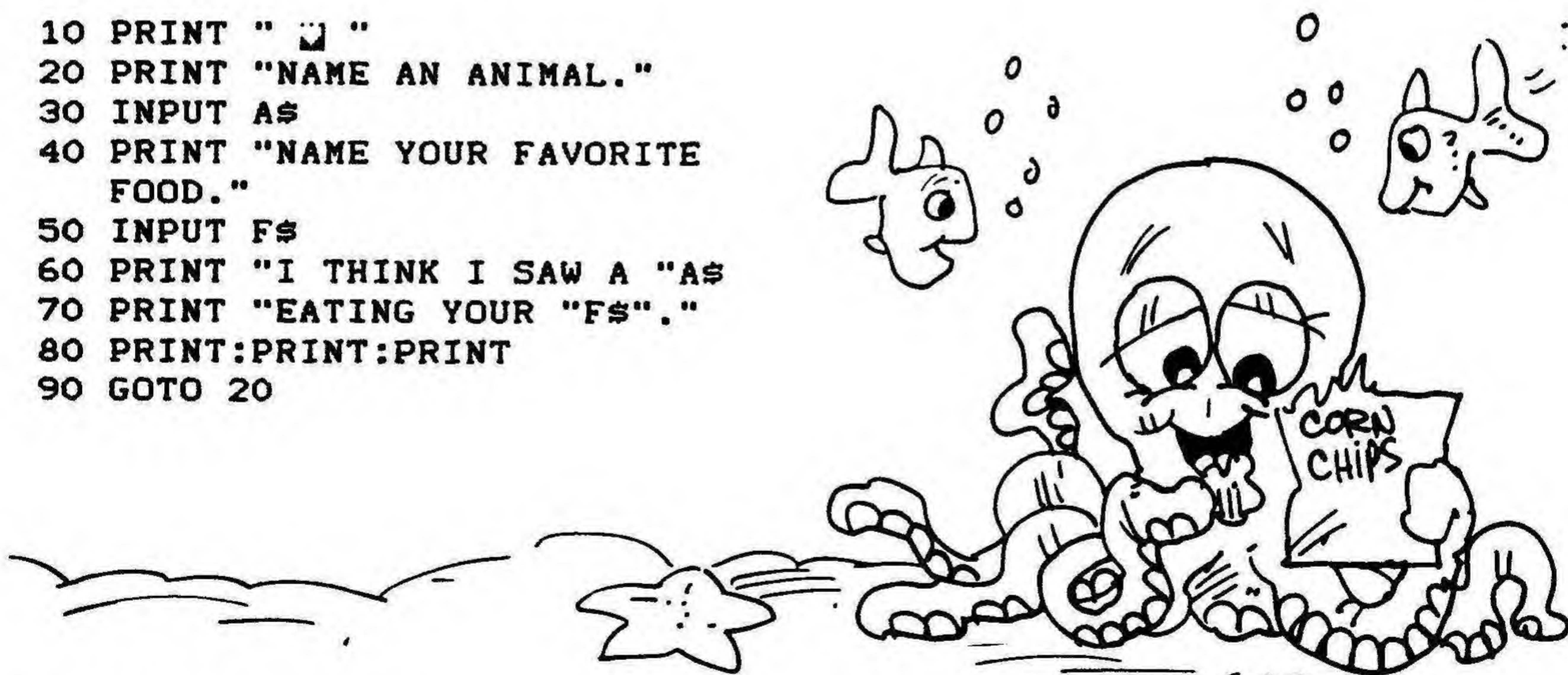


I just want to know if Herbie *really* saw a hippopotamus with punk rock hair! If you typed your program right, and told him you saw a hippo, he would have told you that too.

Feeding Time at the Zoo

Herbie is not ready to quit. Look at his next silly, *silly*, SILLY sentence. I don't think he should have gone to the zoo!

```
10 PRINT "  "
20 PRINT "NAME AN ANIMAL."
30 INPUT A$
40 PRINT "NAME YOUR FAVORITE
   FOOD."
50 INPUT F$
60 PRINT "I THINK I SAW A "A$"
70 PRINT "EATING YOUR "F$"."
80 PRINT:PRINT:PRINT
90 GOTO 20
```



I did the program and discovered that an octopus was eating my corn chips! Did your computer tell you something like that? Remember, the program should be typed in as shown above.

Mary Zoo's Nursery

Oh no! Not another animal program! Here it goes! It's not all there, though. Finish the program by filling in the blanks.

```
10 PRINT " "
20 _____ "NAME AN ANIMAL."
30 INPUT AS
40 PRINT "MARY HAD A LITTLE "
_____
50 PRINT:PRINT:PRINT
60 GOTO _____
```



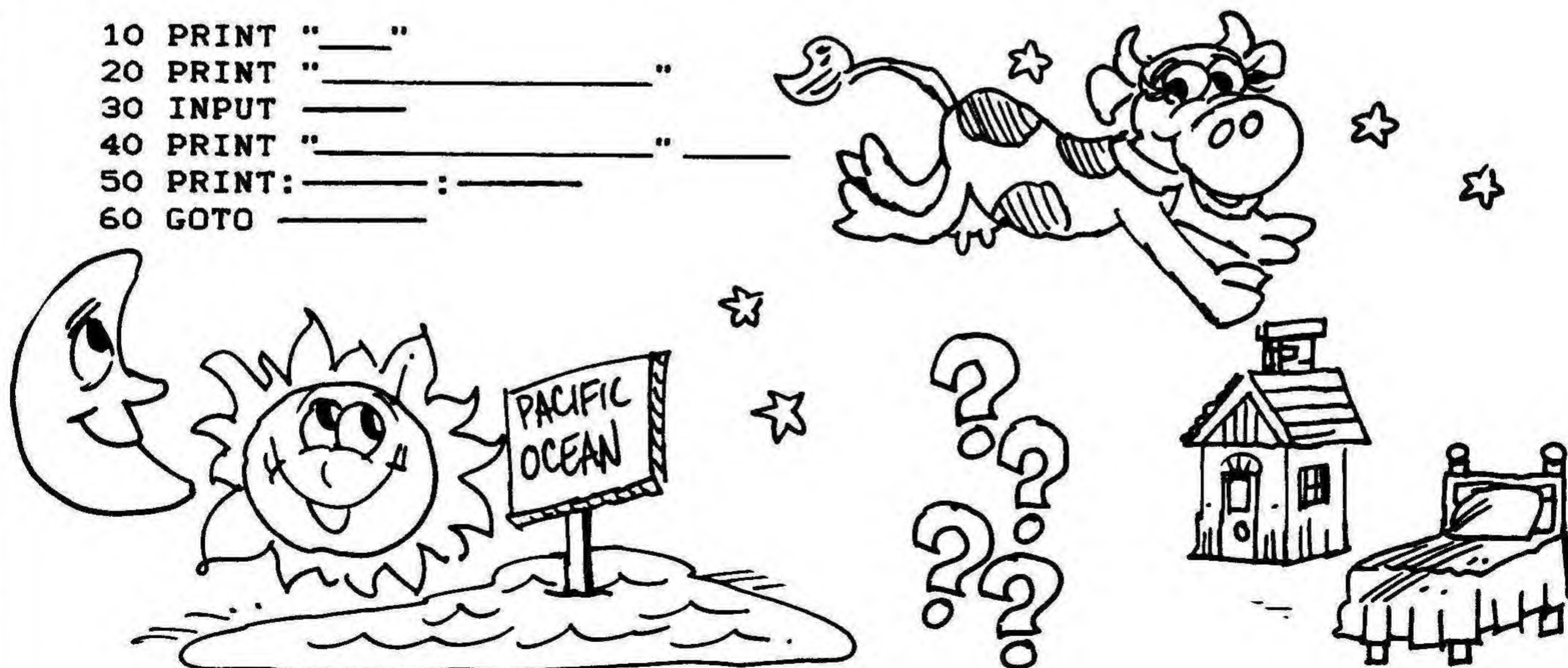
Did you discover that Mary had a whole lot of pets, and not just a lamb? Mary will have any animal that you decided to enter into the program. No wonder her name is Mary Zoo.

Silly Sentence

Maybe you have an idea for a silly sentence. Try one. You're on your own!

Need an idea? How about a nursery rhyme. Let's see...the cow jumped over the moon, the sun, the ocean, the house, the bed, the ????

```
10 PRINT "_____"
20 PRINT "_____"
30 INPUT _____
40 PRINT "_____"
50 PRINT:_____:_____
60 GOTO _____
```



Funny Business

There are lots of people who use computers. Some people like computers for fun; some like computers for business; some like computers for funny business! What kind of business do you think this program relates to?

```

10 PRINT " 🚪 "
20 PRINT:PRINT:PRINT "WHAT IS YOUR NAME?"
30 INPUT N$
40 IF N$ = "JESSE JAMES" THEN GOTO 100
50 PRINT " 🚪 "
60 PRINT:PRINT:PRINT
70 PRINT N$", YOU ARE NOT THE ONE WE ARE LOOKING FOR, ";
80 PRINT "UNLESS, OF COURSE, YOU THINK WE SHOULD BE LOOKING";
90 PRINT " FOR YOU. IS THERE SOMETHING YOU WOULD LIKE
   TO TELL US ABOUT?":END
100 PRINT " 🚪 ":PRINT:PRINT:PRINT
110 PRINT N$"! "
120 PRINT "HOW NICE TO MEET YOU, MR. JAMES. WE HAVE BEEN ";
130 PRINT "LOOKING FORWARD TO THIS OPPORTUNITY FOR A
   LONG TIME."
140 PRINT:PRINT "WE HAVE A LITTLE PRESENT FOR YOU."
150 PRINT "WON'T YOU PLEASE HOLD OUT YOUR HANDS.....CLINK."

```



See what the computer says if you enter your name as Jesse James. Did you land in the clinker?

Scoreboard

This program is for those who really like to rush at things. It helps them keep everything straight. Do you know what game it is?

```

10 PRINT " 🚪 "
20 PRINT:PRINT "WHAT IS YOUR SCORE?"
30 INPUT S
40 PRINT:PRINT "YOUR SCORE IS "S
50 PRINT:PRINT "DID YOU MAKE A TOUCHDOWN?"
60 INPUT T$
70 IF T$ = "YES" THEN GOTO 120
80 PRINT:PRINT "DID YOU MAKE A FIELD GOAL?"
90 INPUT F$
100 IF F$ = "YES" THEN GOTO 200
110 GOTO 40
120 LET S = S + 6
130 PRINT:PRINT "DID YOU MAKE THE POINT AFTER?"
140 INPUT P$
150 IF P$ = "YES" THEN LET S = S + 1
160 GOTO 40
200 LET S = S + 3
210 GOTO 40

```



Fly Me to The Moon

This program is for *real* travelers. RUN it and see.

```

10 PRINT " 🚀 "
20 PRINT "AT WHAT SPEED ARE YOU TRAVELING?"
30 INPUT S
40 PRINT:PRINT "HOW MANY HOURS HAVE YOU BEEN ALOFT?"
50 INPUT T
60 LET D = S * T
70 LET MD = 238857 - D
80 IF MD > 0 THEN GOTO 110
90 IF MD = 0 THEN GOTO 130
100 IF MD < 0 THEN GOTO 150
110 PRINT:PRINT "YOU ARE ONLY "MD" MILES FROM THE
    MOON."
120 PRINT "KEEP GOING!":END
130 PRINT:PRINT "YOU MUST BE ON THE MOON!"
140 PRINT "ARE YOU SURE YOU DIDN'T HEAR A CRASH?":END
150 PRINT:PRINT "YOU MISSED THE MOON!"
160 PRINT "BETTER TURN IN YOUR ASTRONAUT'S LICENSE.":END
    
```



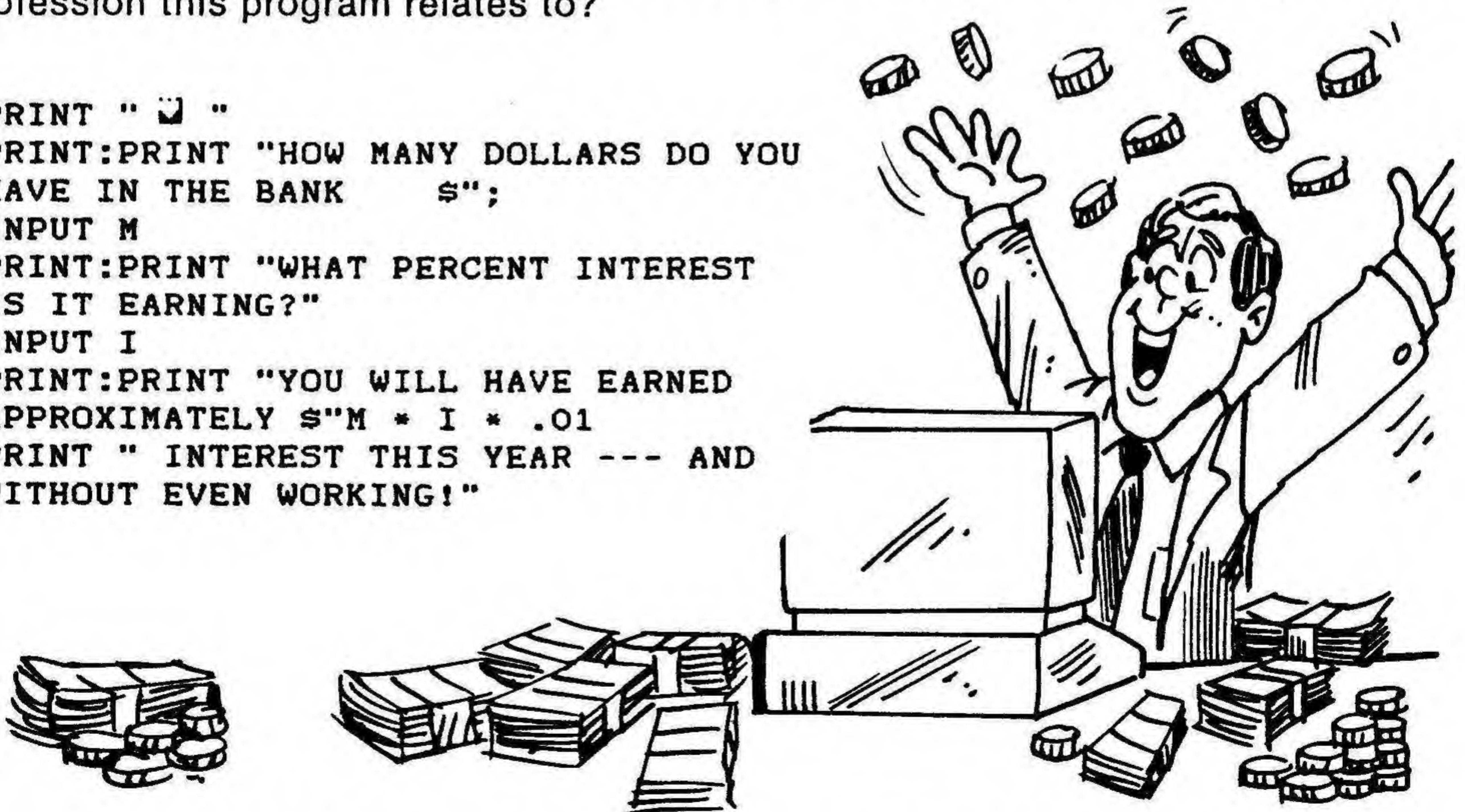
Did the program calculate your distance from the moon? If not, try checking your typing very carefully.

Easy Money

Here's a program for people who like to earn money while they sit around. Do you know what profession this program relates to?

```

10 PRINT " 💰 "
20 PRINT:PRINT "HOW MANY DOLLARS DO YOU
    HAVE IN THE BANK    $";
30 INPUT M
40 PRINT:PRINT "WHAT PERCENT INTEREST
    IS IT EARNING?"
50 INPUT I
60 PRINT:PRINT "YOU WILL HAVE EARNED
    APPROXIMATELY $"M * I * .01
70 PRINT " INTEREST THIS YEAR --- AND
    WITHOUT EVEN WORKING!"
    
```



If you made lots of money from writing computer programs and put \$1,000.00 in the bank at 8% interest, would your program tell you \$80? If so, you did it right.

Computer Columns

I know you will agree with me when you type the program below. If you don't, write me a letter and tell me why!

```
10 PRINT "COMPUTERS ARE FUN"  
20 GOTO 10
```

Computers can be more fun than that. Let's try some fancier stuff!

```
10 PRINT "COMPUTERS ARE FUN",  
20 GOTO 10
```

Look what the comma did!*It made columns because it spaced it over. Let's try some more punctuation!

*On the VIC there is no difference because of the small screen size. Type this instead:

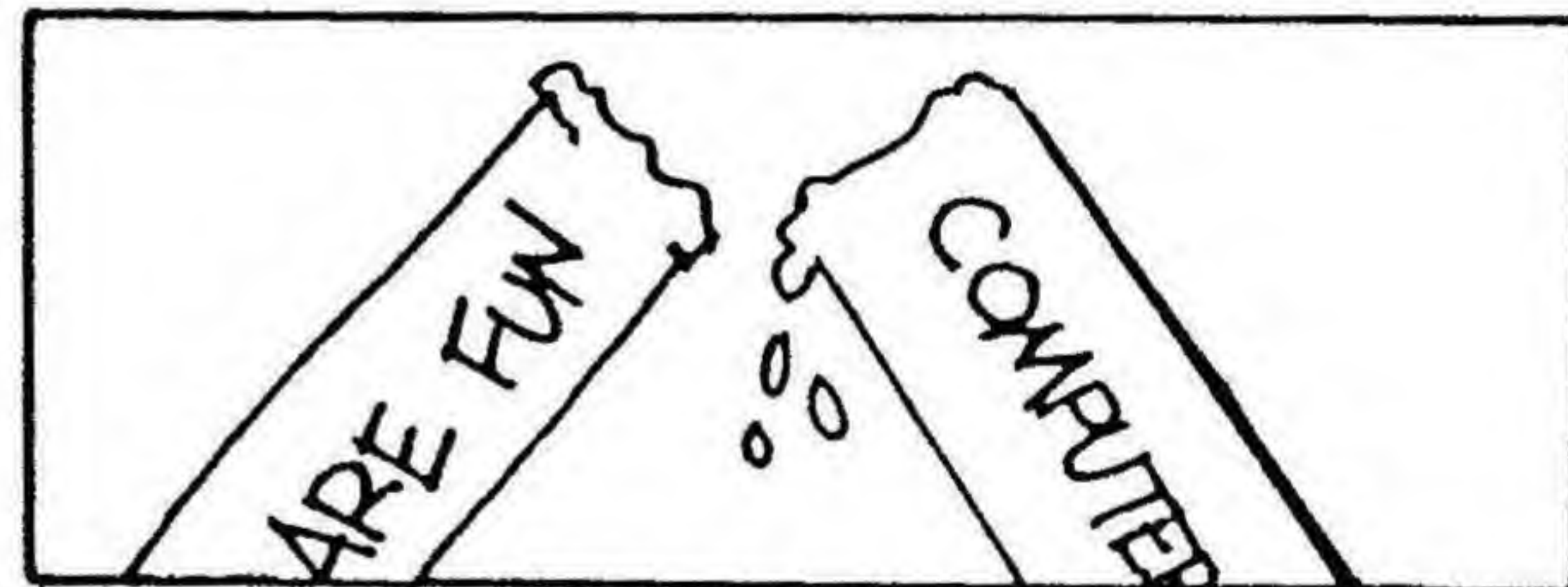
```
10 ?"FUN",  
20 GOTO 10
```

```
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN  
COMPUTERS ARE FUN
```

Computer Glue

Computers are fun and punctuation is fun. Here is another one to try.

```
10 PRINT "COMPUTERS ARE FUN";  
20 GOTO 10
```



Did you get wallpaper? The semi-colon did it. It's like glue to the computer! Did FUN and COMPUTERS stick together? This is how to unglue them. Insert a space after the N and before the ". Let's try it.

```
10 PRINT "COMPUTERS ARE FUN ";  
20 GOTO 10
```



Whew! Now, that is a lot better. If you use computer glue, the semi-colon, make sure you add some spaces. Otherwise... what a sticky mess!

Surprise

Here is something special for you. See what this does!

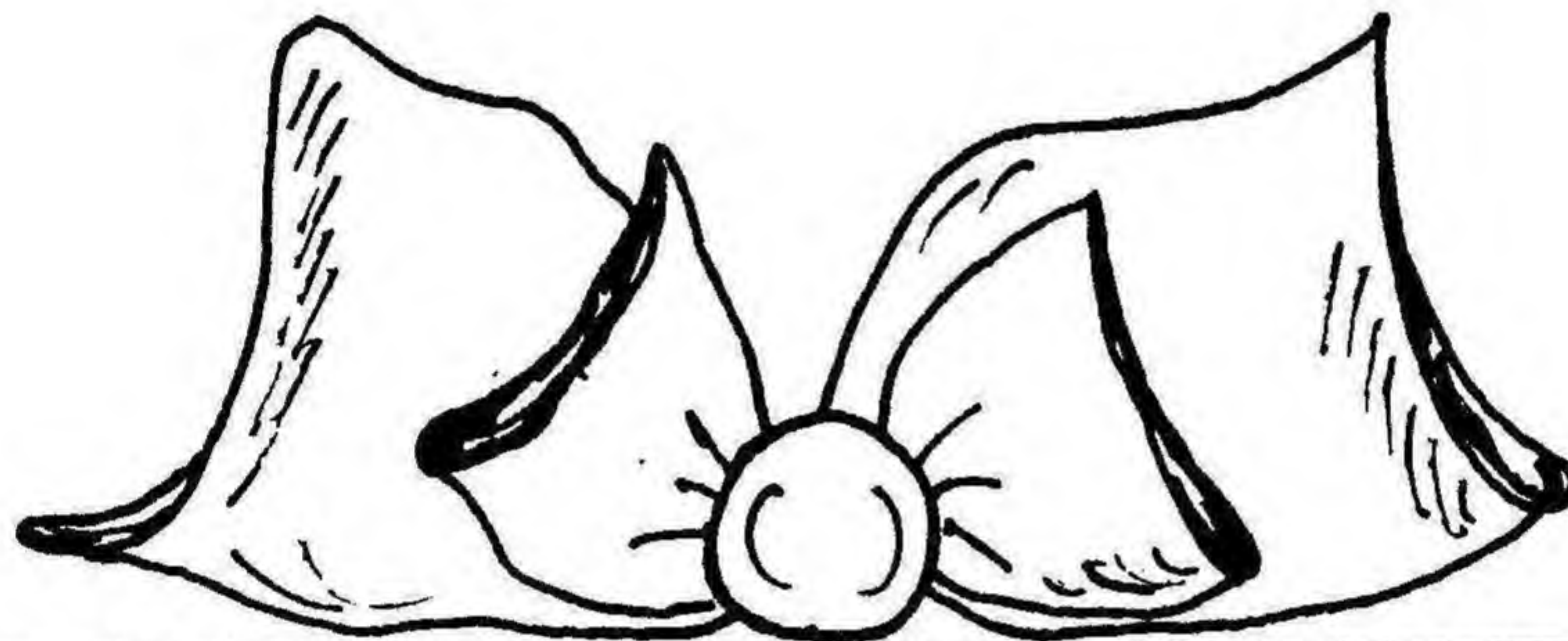
```
10 PRINT "COMPUTERS ARE FUN."  
   " ";  
20 GOTO 10
```



Surprise, isn't it? It's a special formula. Just count how many spaces and letters are in what you want to say:

1. **COMPUTERS ARE FUN** takes up 17 spaces. Subtract that number from 40 (the width of my screen), i.e., $40 - 17 = 23^*$.
2. Then put in that many spaces minus one, i.e., $23 - 1 = 22$.
In this case I programmed 22 spaces after the **FUN** and before the **"** and look what happened!

I practiced on another one! Look below to see what I programmed for you!

[illegible]

**The VIC-20 screen is 22 characters wide. $22 - 17 = 5$. You put in that many spaces (5) minus one ($5 - 1 = 4$). Program it with 4 spaces after FUN and before the " and see what happens!*

QUICK REFERENCE GUIDE

BASIC WORDS

END

Tells the computer to quit.

FOR_____NEXT_____

A BASIC statement used for many purposes. In this book FOR_____NEXT_____ is used to slow down how quickly the computer counts. The larger the number, the slower the count.

GOTO_____

A statement that causes the computer to go to a named line in the program. GOTO can repeat the same action indefinitely, becoming an endless loop which can only be broken by using RUN/STOP .

IF_____THEN_____

This statement sets up a condition for the computer to make a decision. IF_____THEN_____needs the conditions specified (fill in the blanks) in order to work.

INPUT

A statement which tells the computer to wait indefinitely until the user *puts in* an answer to a question.

LET

A statement used to tell the computer a number is equal to a letter (e.g. LET N = 10).

LIST

A command to show the contents of the computer memory.

NEW

A command that erases the computer's RAM memory. Use this before writing a new program.

POKE_____,_____

An instruction to change a pre-set computer condition, such as screen color.

PRINT "_____"

A statement which writes whatever is inside the quotation marks.

RUN

A command which tells the computer to do whatever instructions are listed in the RAM memory.

-[Shift Clear]

A graphic representation of Shift Clear. This clears the screen.

ERROR MESSAGES

ILLEGAL QUANTITY ERROR—The number is too big or too small.

OVERFLOW ERROR—The number is too big.

REDO FROM START—The computer is asking for a number only. Do not enter any letters or words, only a number.

STRING TOO LONG—The answer you input into a string variable, when the computer asked you a question, was too long. Maximum allowable length is 255 characters.

SYNTAX ERROR—There is a spelling, spacing, or punctuation mistake.

UNDEF'D STATEMENT ERROR—A GOTO statement told the computer to go to a line number that does not exist.

SYMBOLS

- + Addition
- − Subtraction
- * Multiplication
- / Division

- < Less Than
- > Greater Than
- <> Not Equal To
- = Equal To

;
Semi-colon is like glue to the computer.


,
Comma prints out in columns.


:
Colon separates statements on the same line.


\$
A dollar sign attached to a letter (e.g. N\$), forms a string variable.


" "
Quotation marks always go with a PRINT statement.

IMPORTANT KEYS

COMMODORE  Key—Used with the number/color keys it accesses more colors. On the VIC-20 SHIFT + COMMODORE key toggles between upper and lower case.

CLR HOME—The key "homes" the cursor to the upper left corner of the screen. SHIFT + CLR HOME erases the screen and "homes" the cursor. It puts a  in the program list.

CRSR  —To move the cursor to the right, press the CRSR key. To move to the left, use the CRSR key and SHIFT at the same time.

CRSR  —To move the cursor down, press the CRSR key. To move up, press the CRSR key and SHIFT at the same time.


CTRL Is used with the number keys to perform tasks.


FUNCTION Keys (F1-8)—Do not perform any functions in BASIC, unless programmed to do so by the programmer.

INST DEL (insert or delete)—Pressed by itself, it deletes. Used with SHIFT it inserts space.

RETURN—The key used at the end of each line of instruction. It is the most used key on the keyboard.

RUN STOP—Stops your program.

RVS OFF (CONTROL 0)—Takes off reverse writing. It puts a  in the program list.

RVS ON (CONTROL 9)—Puts on reverse writing. It puts an  in the program list.

SHIFT—Lets you get symbols on the top half of number and other special keys.

SHIFT LOCK—If you are in lower case it locks the computer into upper case. If you are in upper case, it locks you into graphics characters.

SPACE BAR—Gives a blank space to separate words.

COMPUTER WORDS

BASIC

Beginner's All-Purpose Symbolic Instruction Code

BASIC is the computer language that this book teaches.

BYTE

A small section of computer memory. It is like a "brain cell" to the computer.

COMMAND

An instruction that needs no line number in front of it. The computer does it immediately. For example, RUN, LIST, and NEW are usually used as commands.

CURSOR

The blinking marker that indicates where you are on the screen.

LINE NUMBER

The number before a computer statement. Line numbers can be done many ways but they usually increase by 10's (e.g. 10, 20, 30, etc.).

NUMERIC VARIABLE

See VARIABLES

PROGRAM

A set of numbered instructions stored in RAM memory.

PROMPT

READY indicates the computer is ready to take your next command.

RAM MEMORY

The part of the computer memory that can be changed. It is "short-term" memory that can be programmed and then erased by writing NEW or turning off the computer.

STATEMENT

Instructions to the computer that are part of a computer program because they have a line number.

STRING VARIABLE

See VARIABLES

VARIABLES

A letter in the computer's memory to store names or numbers. There are two types of VARIABLES: String and Numeric.

STRING VARIABLES are words, or letters and numbers, "strung" together and represented as a letter with a \$ attached to it.

NUMERIC VARIABLES are numbers represented by a letter.

EXAMPLE: LET N\$ = "HERBIE" N\$ is a string variable.
 LET N = 10 N is a numeric variable.

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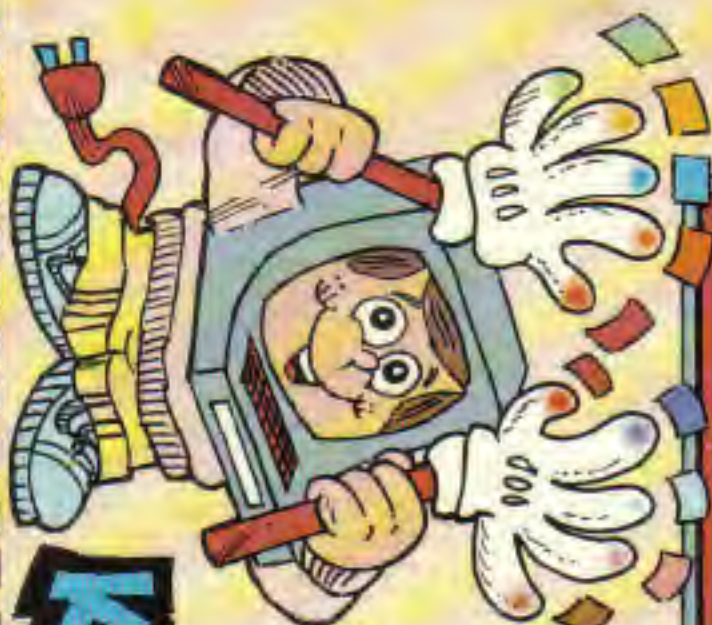
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